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15, 1946
E 35, No. 14

AMERICAN
DYESTUFF REPORTER

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AUG 7 1946

Seeing is believing

In these pages, Geigy has repeatedly called attention to the fastness to light of the Solophenyl* Colors — direct colors for rayon and cotton.

Seeing is believing, however, and those mills whose products require the last word in light fastness, have convinced themselves, through their own comparative light exposures, that "only the fastest to light direct colors bear the name *Solophenyl.*"

Write for a copy of Color Card 318-D and select those Solophenyl Colors you would like to test.

*Reg. U. S. Patent Office

GEIGY COMPANY, INC.

89-91 BARCLAY STREET — NEW YORK — NEW YORK

Boston · Providence
Philadelphia · Charlotte
Toronto · Portland, Ore.

Geigy
Dyestuff Makers Since 1859

In Great Britain
The Geigy Co., Ltd.
National Buildings
Parsonage, Manchester

L PUBLICATION
of the
OCEEDINGS
AN ASSOCIATION
TILE CHEMISTS
COLORISTS

whenever you think of nylon

just think of

Supernylite

fast dyes for nylon

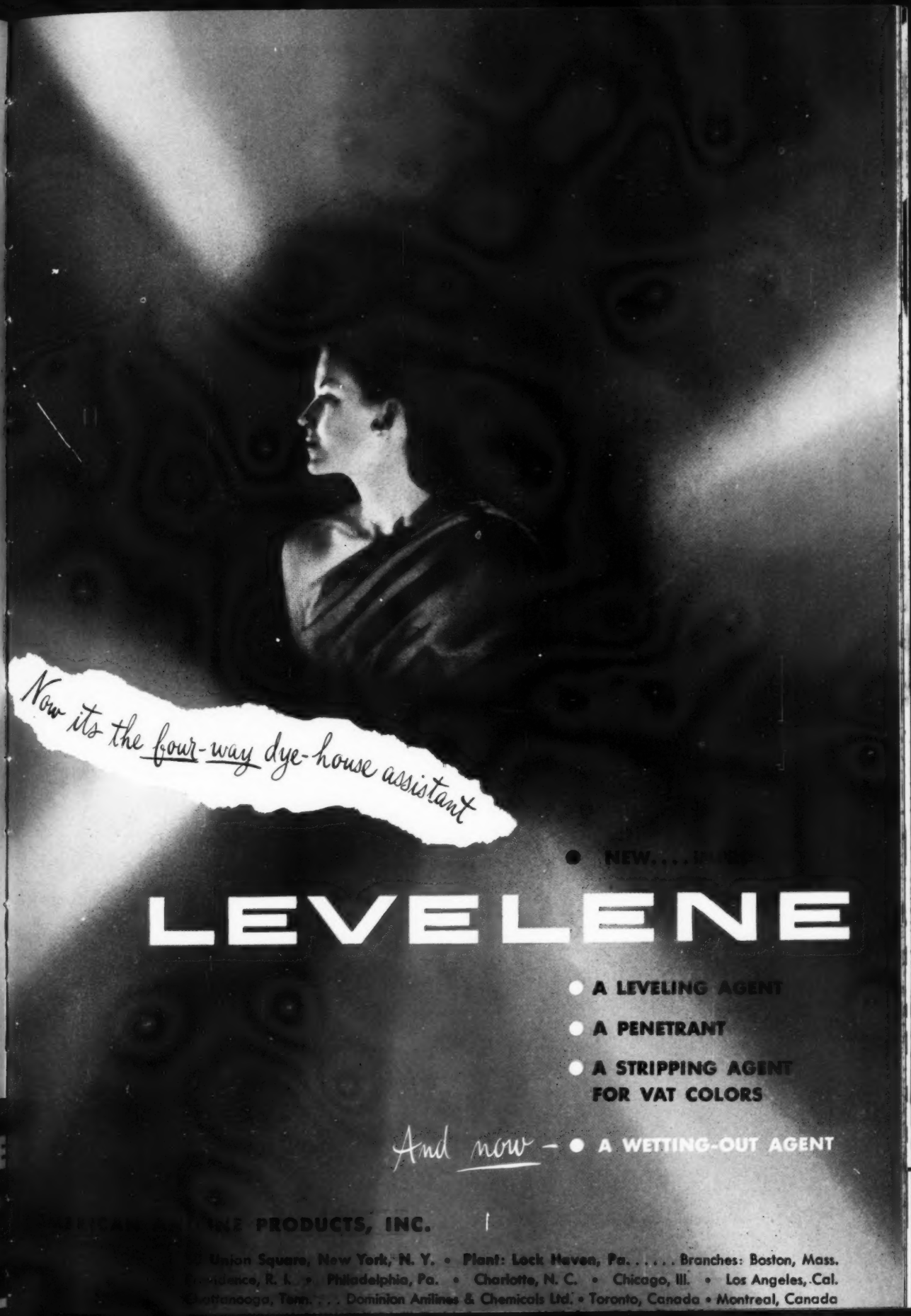
light fastness medium shades, 40 to 300 hours

wash fastness 140° F. to 180° F.

Dye Fast Unions on Nylon and Wool.
Dye Fast Unions on Nylon and Rayon or Cotton in combination with SUPER-LITEFAST direct dyes.

Extremely level dying in all percentages, for pastels and heavy shades on piece goods, yarns, etc.

ALTHOUSE
Chemical Company
READING · PA.


Now its the four-way dye-house assistant
NEW....
LEVELENE
A LEVELING AGENT
A PENETRANT
A STRIPPING AGENT FOR VAT COLORS
And now — A WETTING-OUT AGENT
PRODUCTS, INC.
Union Square, New York, N. Y. • Plant: Lock Haven, Pa. . . . . Branches: Boston, Mass.
Philadelphia, Pa. • Charlotte, N. C. • Chicago, Ill. • Los Angeles, Cal.
Dominion Anilines & Chemicals Ltd. • Toronto, Canada • Montreal, Canada

NYANZA

ANILINE & ALIZARINE COLORS

•

TEXTILE CHEMICALS

•

FINISHING MATERIALS

FOR

WOOL — COTTON — RAYON — ACETATE

AND MIXED FIBERS

FACTORY AT ASHLAND MASSACHUSETTS

NYANZA COLOR & CHEMICAL COMPANY, Inc.

215 WATER STREET NEW YORK CITY

FACTORIES:

CHEMICAL MANUFACTURING CO., ASHLAND, MASS. • NEW BRUNSWICK CHEMICAL CO., NEWARK, N. J.

BRANCHES:

Ashland, Massachusetts

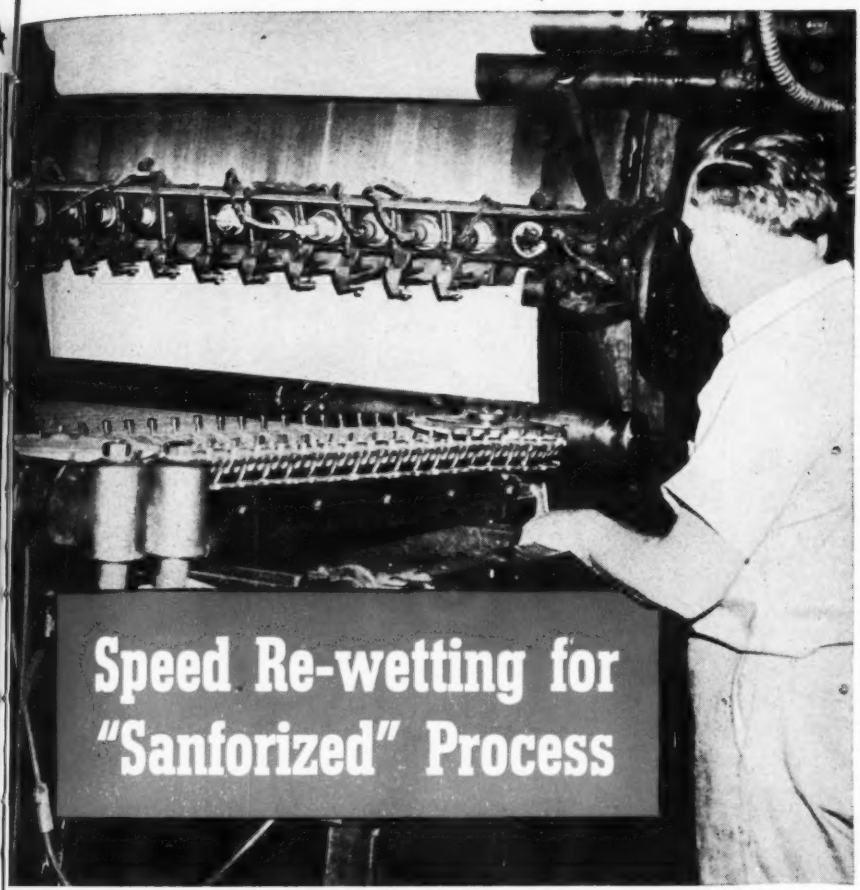
549 West Randolph St., Chicago, Ill. • 635 Drexel Bldg., Philadelphia, Pa. • 115 S.W. Fourth Ave., Portland, Ore.

2657 Magnolia Ave., Knoxville, Tenn. • 304 E. Moorehead St., Charlotte, N. C.

CANADIAN AGENTS:

Charles Albert Smith Limited, 123 Liberty St., Toronto, Canada

American Dyestuff Reporter, Vol. 35, No. 14, July 15, 1946. Published every other Monday. Copyright 1946, by Howes Publishing Co., One Madison Ave., New York 10, N. Y. Domestic subscription, $5.00; Canadian, $6.00; Foreign, $6.00. Entered as second-class matter, Nov. 6, 1919, at the New York, N. Y., Post Office, under the act of March 3, 1879.



S/V Textile Finishing Oils A and B, Penetrate Uniformly into the Cloth

No need to look any further for the right finishing oils to prepare your cloth for shrinking to the "Sanforized" standard!

S/V Textile Finishing Oils A and B, have proved their superiority in such fabrics as twills, drills and denim, as well as in the lighter materials.

The reason: These oils form stable emulsions that penetrate uniformly throughout the cloth so that the cloth uniformly and quickly absorbs moisture as it passes through the conditioning units of the Sanforizing unit. S/V Textile Finishing Oil B is especially recommended for incorporation in starch mixtures when the cloth is to be Sanforized.

S/V Textile Finishing Oils A and B, are highly resistant to oxidation and discoloration. They are permanently free from objectionable odors. Ask your Socony-Vacuum Representative for advice about applications.

Process Products
SOCONY-VACUUM

INVESTIGATE
SOCONY-VACUUM
PROCESS PRODUCTS
Research and Service

Better, Lower-Cost PROCESSING for ALL Textiles

WOOLENS
S/V Woolrex Oils

Improve carding and spinning. Scour out easily.

★

WORSTEDS
S/V Worstex Oils

Lubricate stock uniformly, improve spinning.

★

WATER REPELLENTS
Special S/V Products

Give inexpensive water repellency.

★

FINISHING
S/V Finishing Oils

Plasticize starch mixtures.

★

SANFORIZED PROCESS
S/V Finishing Oils

Insure quick, uniform re-wetting during sanforized processes.

★

RAYON PROCESSING
S/V Rayon Oils

Lubricate, soften and deluster rayon fibers.

★

CORDAGE
Special Oils, Waxes

Provide waterproofing, lubrication and softening.

★

MILDEW PROOFING
S/V Copper-Naphthenates

Prevent fungus growth and increase fabric life.

SOCONY-VACUUM OIL CO., INC.
26 Broadway, New York 4, N. Y.
and Affiliates: Magnolia Petroleum Co., General Petroleum Corp. of Cal.

imparts

Full-Bodied Softness...

to ALL RAYONS
SYNTHETICS & COTTONS

PARAMINE

REG. U.S. PAT. OFF.

The Finish Supreme

MILL MEN have found out about PARAMINE. . . . They know that to specify PARAMINE is to assure a highly desirable, wool-like texture for spun rayons, and an extra-mellow softness for all rayons, synthetics and cottons . . . and mill executives are pleased to find that PARAMINE gives this added sales value without increasing and often lowering finishing costs!

Demonstration or further information furnished at your request. . . .

ARKANSAS CO., INC.

Manufacturers of Industrial Chemicals for over 40 Years

Newark, New Jersey

NUOCIDES

INVESTIGATE →

Now you can control mildew! How? Follow the "Investigate" arrow to the answer — the NUOCIDES, the *line* of Nuodex fungicides.

Here's what the NUOCIDE *line* and mildew control may do for you--

FIRST —— solve your problem of mildew during processing . . . banish production difficulties and expenses caused by annoying, injurious mildew growth.

SECOND — outclass competition . . . add the new, popular, sellable sales plus of mildewproofing to your finished products.

When you investigate NUOCIDES, you'll discover a broad, diversified, versatile *line* of fifteen proved products — with new ones being proved every day — to meet your individual mildew control needs. Greatly expanded beyond the famed metal naphthenates, the NUOCIDE *line* today must surely include a fungicide for you.

Write us. Find out for yourself that it pays to INVESTIGATE NUOCIDES!

NUMBER 1 in a series of advertisements on NUOCIDES *for the textile industry.*

THREE LITTLE BOTTLES

THAT BUILT THE PLANT

REG. U.S. PAT. OFF.

NUODEX PRODUCTS CO., INC., Elizabeth F, N. J.

NUODEX PRODUCTS OF CANADA, LTD., LEASIDE, ONTARIO

The Onyxsans*

Get Lasting Softness and Drape

YOU can give cotton and rayon fabrics a soft, smooth hand, with draping qualities not ordinarily found in such goods. For example, there is no better finish for candlewick spreads than you can get with

The ONYXSANS*

These unique softeners are cation-active. This means that the softness, smoothness and drape they impart to cotton and rayon are *permanent.* Onyxsan lastingly softens cotton and rayon by the effects produced IN the yarn. This is much different from surface oiling. After twenty standard washings a spread treated with Onyxsan will retain virtually all its original softness.

Easy to Use

Thoroughly scoured cloth is given a full dip in the selected Onyxsan solution and then passed over the cans, through the drying range and calendered.

Stable and Uniform

The Onyxsans are synthetics, made from uniform raw materials from a dependable source. Every lot is identical with every other lot. Not only are they uniform and stable, but fabrics finished with Onyxsan do not become rancid in storage. There is no development of odor, no mark off and no stiffening of goods.

For Other Textiles

Onyxsan softness is permanent in cotton and rayon. On silk and wool, the effect is not fast to washing, but the touch can be greatly improved by treatment. Onyxsan is particularly valuable on mixed wool-rayon, cotton-rayon and rayon-silk fabrics. It is in wide use for giving a silk-like softness to Bemberg-topped hose.

Ask for Technical Data and Reports on the Onyxsans Suited to Your Particular Fabrics.

INVESTIGATE These Other ONYX SPECIALITIES

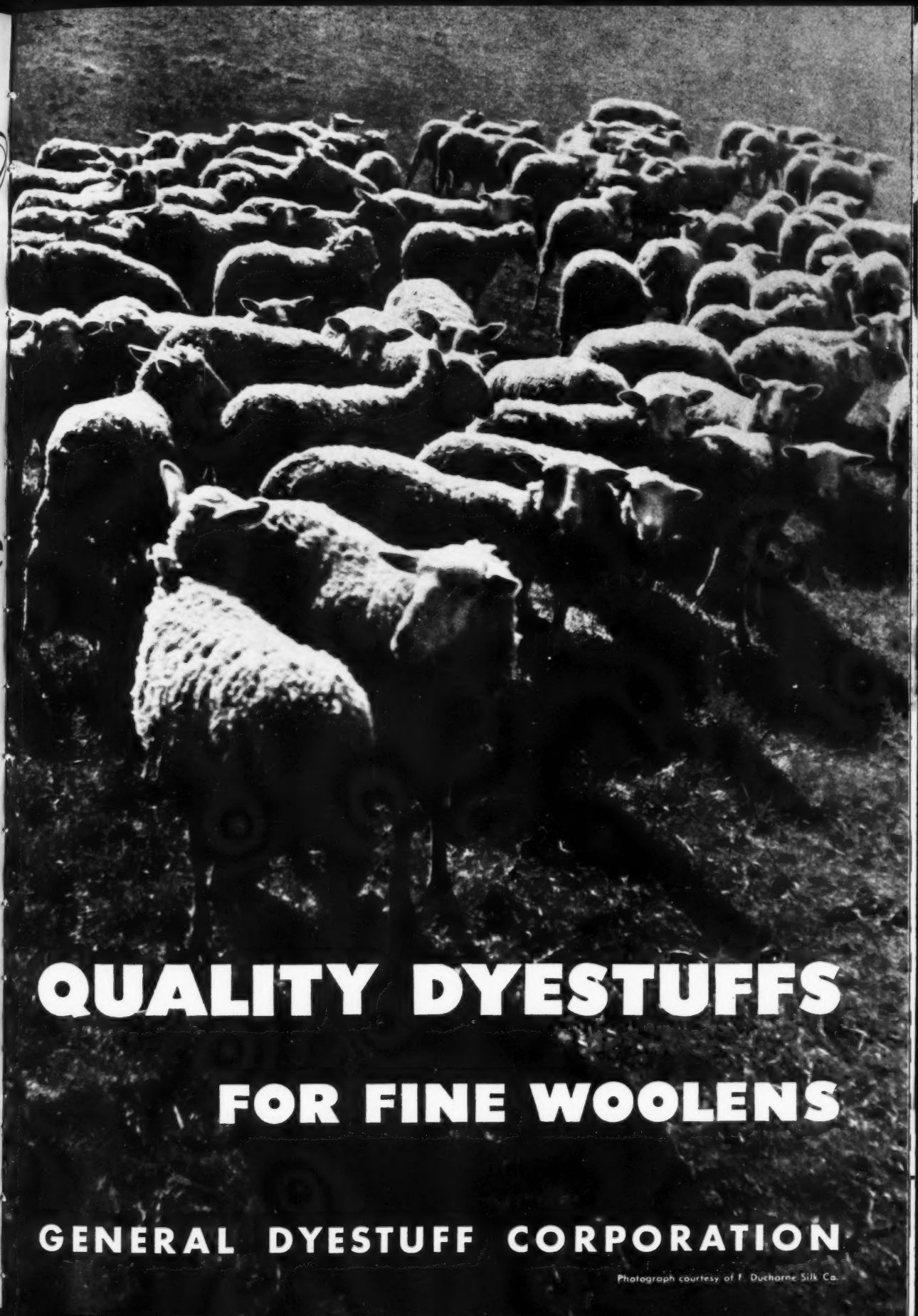
REPEL-O-TEX D3 and D4
For providing durable and effective water repellency to cotton, viscose, acetate and other fabrics.

NEUTRONYX 228
A non-ionic, non-foaming surface active detergent and emulsifying agent for all fabrics, with unusual value in scouring acetate, rayon and wool (in acid or neutral solution). It is a highly useful auxiliary for simultaneous scouring and acid dyeing of wool.

*Patented

ONYX OIL & CHEMICAL COMPANY
JERSEY CITY 2, N. J.
CHICAGO • PROVIDENCE • CHARLOTTE • ATLANTA
In Canada: ONYX OIL & CHEMICAL CO., LTD. — MONTREAL, TORONTO, ST. JOHNS, QUE.
For Export: ONYX INTERNATIONAL, JERSEY CITY 2, N. J.

onyx CHEMICALS FOR DYEING AND FINISHING


QUALITY DYESTUFFS
FOR FINE WOOLENS
GENERAL DYESTUFF CORPORATION
Photograph courtesy of F. Ducharne Silk Co.

Where Freedom from Iron is a "Must" Use Hooker Sulfides

Eight parts per million (.000008 of a pound per pound of product) is as much iron as you will ever find in a pound of Hooker Sodium Sulfide. Manufacturing refinements and purification techniques developed by Hooker chemical engineers bring you this Sulfide that can be safely used in practically every case where an iron free sulfide is needed. And in Hooker Sodium Sulfhydrate the iron content has been brought down to a maximum of 5 parts per million.

Where your processes require sulfides, you can be sure of purity of your products by using uniformly high purity Hooker Sodium Sulfide and Sodium Sulfhydrate. A request on your company letterhead will bring Technical Data Sheets and samples.

SODIUM SULFIDE, Na_2S, a light yellow colored solid in flake form, soluble in water, slightly soluble in alcohol, insoluble in ether.

Analysis

Sodium Sulfide	60 to 62%
Sodium Chloride	1.5% Max.
Other Sodium Salts	2.0% Max.
Iron	8ppm Max.
All other metals	1ppm Max.
Water of Crystallization	36.5 to 34.5%

Shipping Containers, Drums 90 and 350 lbs. net.

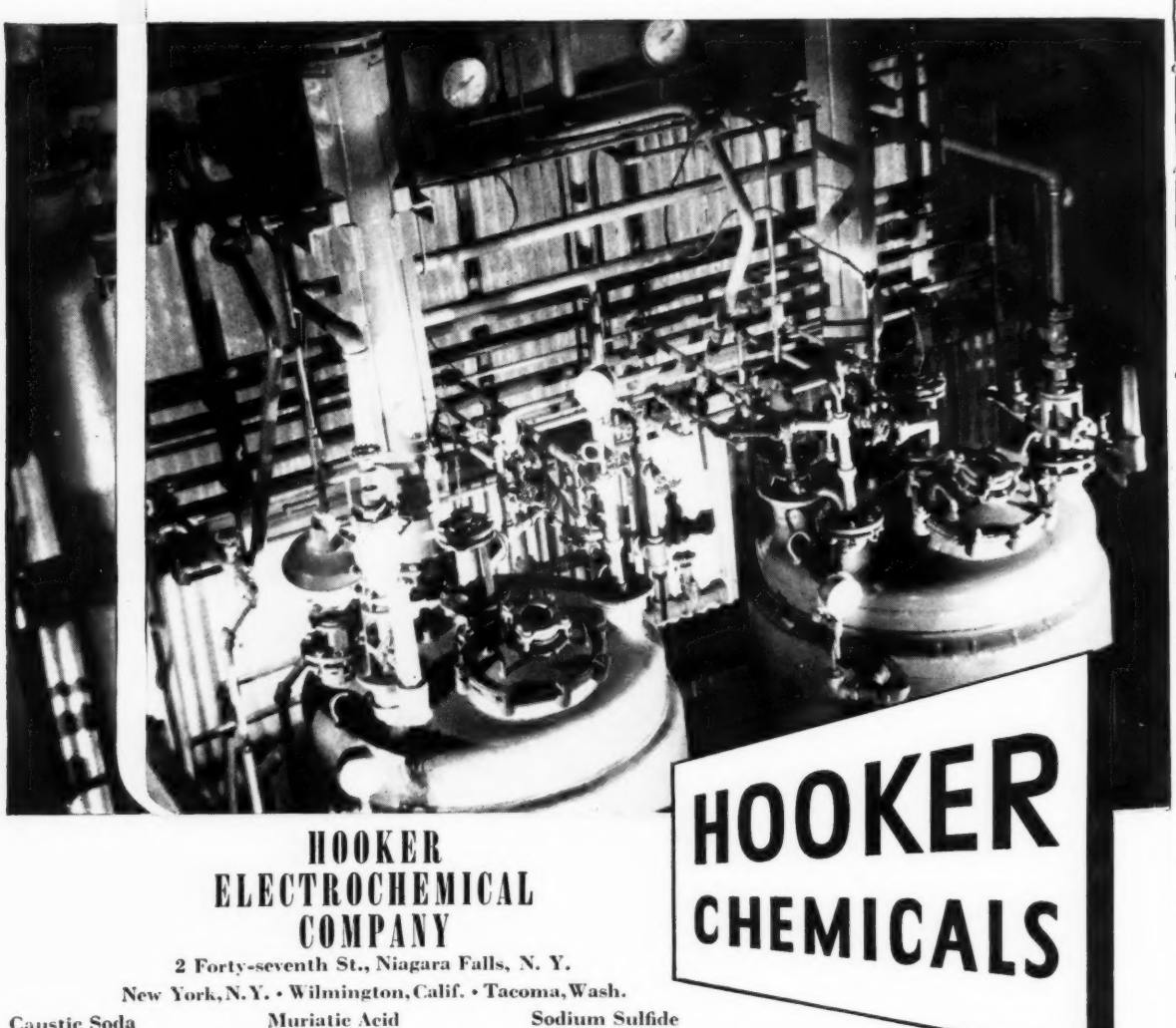
SODIUM SULFHYDRATE, NaSH, a light yellow colored solid in flake form. Soluble in water and alcohol, insoluble in ether.

Analysis

Sodium Sulfhydrate	70 to 72%
Sodium Hydroxide	0%
Sodium Sulfide	1 to 3%
Sodium Chloride	1% Max.
Other Sodium Salts	1% Max.
Iron	5ppm Max.
All other metals	1ppm Max.
Water of crystallization	28 to 26%

Shipping Containers, Drums 90 and 350 lbs. net.

"Process equipment where iron-free Hooker Sulfides are being used."



HOOKER CHEMICALS

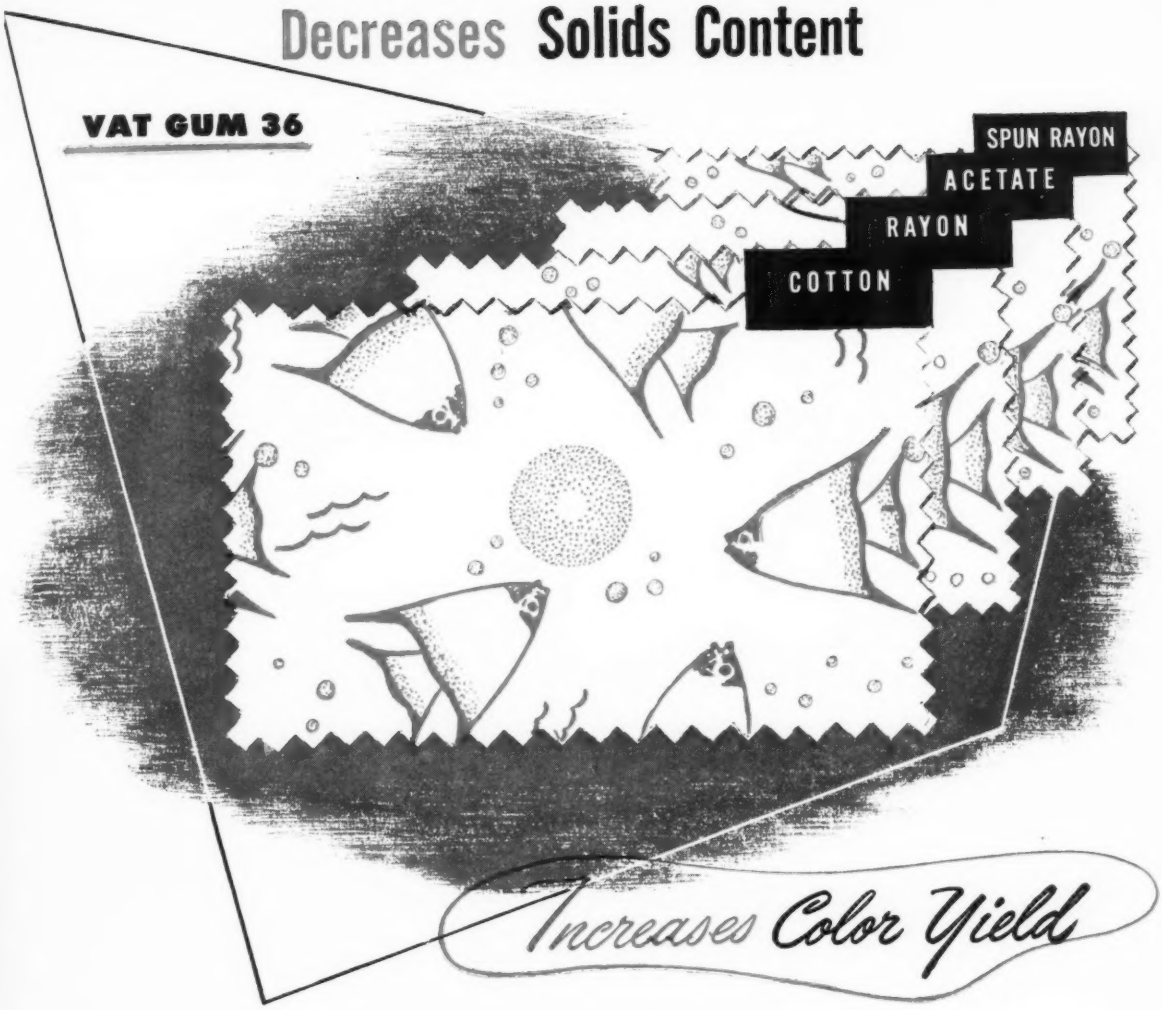
HOOKER ELECTROCHEMICAL COMPANY

2 Forty-seventh St., Niagara Falls, N. Y.

New York, N.Y. • Wilmington, Calif. • Tacoma, Wash.

Caustic Soda **Muriatic Acid** **Sodium Sulfide**
Paradichlorbenzene **Chlorine** **Sodium Sulfhydrate** 2930

Decreases Solids Content



VAT GUM 36 is a smooth-textured, free flowing vat printing thickener. It reduces solids content requirements by as much as 40% over ordinary cook-up types. It offers excellent rinsibility. It produces prints with sharp detail, unbroken lines and superior color yield.

VAT GUM 36 is highly recommended for printing cotton, rayon, spun rayon, or acetate fabrics. Its cohesive, long-flowing characteristics provide better working properties in the machine and increased printing speeds. Its low solids content leaves the cloth soft and pliable.

Further, the low solids content of pastes made with VAT GUM 36 allows the residual gum to wash out of printed fabrics completely. It minimizes the danger of 'mark-offs' or bleeding in the ager or soaper. It assures an exceptionally high color yield — with a maximum depth and brightness of shade. Write for full information.

National also produces: AMBERTEX, a heavy-bodied thickener for white discharge, direct and vat color printing; AZO GUM for Rapidogen or Pharmosol, Indigosol or Algosol and Napthol colors; FIBERTEX for finishing sheer cottons and rayons; AMYLON, a cook-up type, to replace natural gums as a printing thickener; FABRIC ADHESIVE 584 to keep patterns in register and speed production.

Offices: 270 Madison Avenue, New York 16; Boston, Philadelphia, Chicago, Indianapolis, New Orleans, San Francisco and other principal cities. In Canada: Meredith, Simmons & Co., Ltd., Toronto. In Holland: Nationale Zetmeelindustrie, N.V., Veendam.

National
STARCH PRODUCTS

STARCHES — AND SPECIALTIES WITH EASILY DEMONSTRATED SUPERIORITY

A NEW MULTI-PURPOSE SYNTHETIC AUXILIARY

REPCOLENE, a neutral blend of fatty acid esters and aromatic sulphonates, is a clear, free-flowing, non-jelling liquid. **REPCOLENE** is an effective wetting and scouring agent. **REPCOLENE** also acts as an excellent dye assistant and leveling agent. **REPCOLENE** is extremely stable, and its activity is not affected by acids, alkalies, lime, or the salts, usually found in hard water.

REFINED PRODUCTS COMPANY
Lyndhurst • New Jersey

• **Manufacturers of PERMA-CIDE, the approved, outstanding, mildew-proofing agent**

Southern Representative: DYER S. MOSS, 1301 Liberty Life Bldg., Charlotte, North Carolina

New England Representatives: E. L. LEGG, P. O. Box 597, Providence, R. I.
CLARENCE E. MOSS, 19 Wilson Ave., Rumford (16) R. I.

Canadian Selling Agents: Berkeley Products Canada, Ltd., 41 Hillcrest Avenue, St. Catharines, Ontario, Canada.
Exporting Agent: Chem-Col Company, 82 Wall St., New York City

control shrinkage with *Lanaset** RESIN

Smart, modern woolens for year 'round wear are now being made of fabrics treated with LANASET* RESIN. These fabrics offer an invaluable "selling point"—the assurance that, with proper care, they can be washed over and over again and retain their size and fit like the suit worn by the young lady at the right. The fabric of the identical suit worn by her companion at the left was *not* treated with LANASET RESIN. Note the difference after the same number of washings.

LANASET RESIN is a melamine resin that controls excess shrinkage and felting, stabilizes the fibers, guards the natural beauty, texture, absorbency and other desirable qualities of wool. It is a safe, convenient, and effective process for treating wool fabrics.

Store merchandisers from coast to coast are enthusiastic about LANASET RESIN—treated merchandise. It is adding up to better customer service, and greater consumer satisfaction through longer life of merchandise.

Our technical service will be glad to help you plan a new line of woolens featuring the LANASET RESIN finish.

LANASET Resin • SHEERSET† Resin • AEROTEX† Softener H • LACET† Resin*

**Reg. U. S. Pat. Off.*
†Trade-mark of American Cyanamid Company

Untreated *Treated*

Lanaset RESIN
FOR WOOL SHRINKAGE CONTROL

AMERICAN CYANAMID COMPANY
TEXTILE RESIN DEPARTMENT
BOUND BROOK, NEW JERSEY
New York • Boston • Philadelphia • Providence • Charlotte • Chicago

Get Reduced Seconds !

NEW NOPCO NYLON CONING OIL HELPS 5 WAYS

Get . . .

FEWER UNDER-WINDS and PRESS-OFFS

Nopco Nylon Coning Oil (Nopco 1415-M) is a specially compounded blend of individually functioning constituents, which assures the coning of a firm—yet not hard—cone, plus the even stitch formation desired by every knitter—plus many other advantages.

Get . . .

BALANCED VISCOSITY

Nopco 1415-M has adequate body to produce a "good" cone, together with a sufficiently low viscosity to insure proper migration of the oil and even distribution throughout the cone.

Get . . .

LESS STRIPPING

Insoluble Nopco 1415-M checks the over-plasticizing effect of water on the size during knitting —a very common cause of stripping.

Get . . .

MINIMIZED FLAKING

One component of Nopco 1415-M tends to form a firmer bond between size and nylon yarn, thus minimizing the tendency of the size to flake.

Get . . .

REDUCED ROLL

The unique combination of the above properties in Nopco 1415-M acts to reduce roll of stocking on knitting-machine—to insure snag resistance—to help eliminate sleazy, distorted stitches.

In these five important ways, this new Nopco Nylon Coning Oil (Nopco 1415-M) helps you reduce seconds and successfully meet the tremendous demand for quality nylons.

•

"BOOM DAYS" for nylon lie ahead. Competition will be keen. Give your nylon the protection of a coning oil such as Nopco 1415-M. For further particulars write . . .

NATIONAL OIL PRODUCTS CO., HARRISON, N. J.

Branches: Boston • Chicago • Cedartown, Ga. • Richmond, Calif.

NOPCO 1415-M A NEW MORE EFFECTIVE **NYLON CONING OIL**

NOPCO EVOLVED THROUGH RESEARCH

DO YOU KNOW
National Aniline and its predecessor companies were the first American dyestuffs producers to provide technical service through nearby laboratories.
Today National Aniline maintains a nation-wide network of Application Laboratories convenient to all principal textile centers. Their composite knowledge and skills on dyestuffs formulation and application may be helpful on your next difficult color match.
WHEREVER COLOR IS USED
National Aniline
DIVISION OF
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET NEW YORK 6, N. Y.
BOSTON · PROVIDENCE · PHILADELPHIA · CHICAGO · SAN FRANCISCO · CHARLOTTE
GREENSBORO · ATLANTA · NEW ORLEANS · CHATTANOOGA · PORTLAND ORE. · TORONTO

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HAR

FOR RICH,
SMOOTH SOFTNESS

CATYLON

FOR PERMANENT
UNIFORM FINISH

A HARTEX PRODUCT

Cation-active Softener

FOR BRIGHTER SHADES
AND PRINT COLORS

ECONOMICAL

CATYLON is economical—only an exceedingly small quantity of this very efficient softening agent need be used.

CATYLON is permanent—repeated laundering or dry cleaning will not affect the original handle of the fabric or the rich, smooth softness of the finish.

CATYLON makes fabrics more "salable"—assures bright shades, clear print colors and uniform finish.

CATYLON is available in a complete range of Cation-Active chemical formulae to meet all your special fabric requirements. Let our demonstrator prove, in *your* plant, the benefits resulting from the use of CATYLON. Your inquiry entails no obligation.

HART PRODUCTS CORPORATION • 1440 Broadway, N.Y. 18, N.Y.

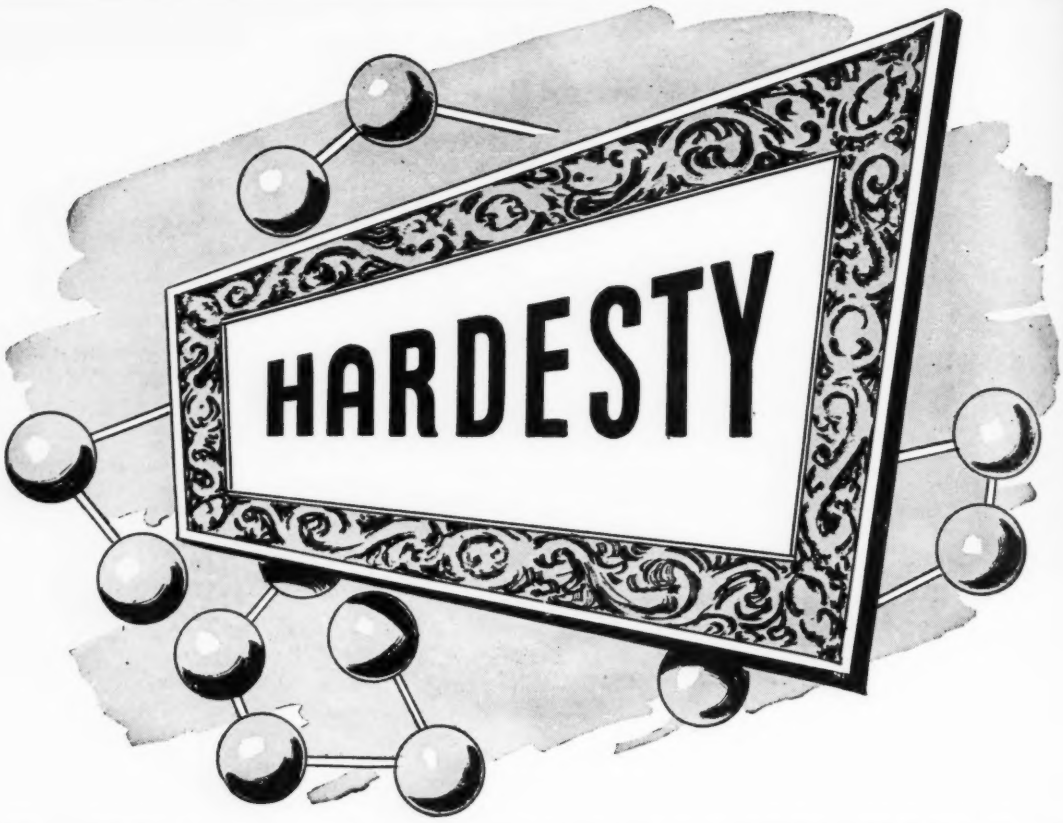
HARTEX PRODUCTS

Rayon Oils & Sizes	Splashproof Compounds
Nylon Oils & Sizes	Delustrants
Kier Bleaching Oils	Leveling Agents
Finishing Oils	Cationic Softeners
Synthetic Detergents	Cotton Warp Dressings
Conditioning Agents	Wetting-Out Agents
Scrooping Agents	Weighting Agents
Sanforizing Oils	Mercerizing Penetrants

Send for free booklet, "Mercerizing and ALKAMERCE – The Ideal Dry Mercerizing Penetrant"

Hart Products

based on research



HARDESTY FITS INTO YOUR PICTURE

Many products and processes — some in the minds of planning boards, some in the pilot plant stage, some still in the laboratory — call for the use of Fatty Acids and their derivatives. That's where Hardesty fits into the picture.

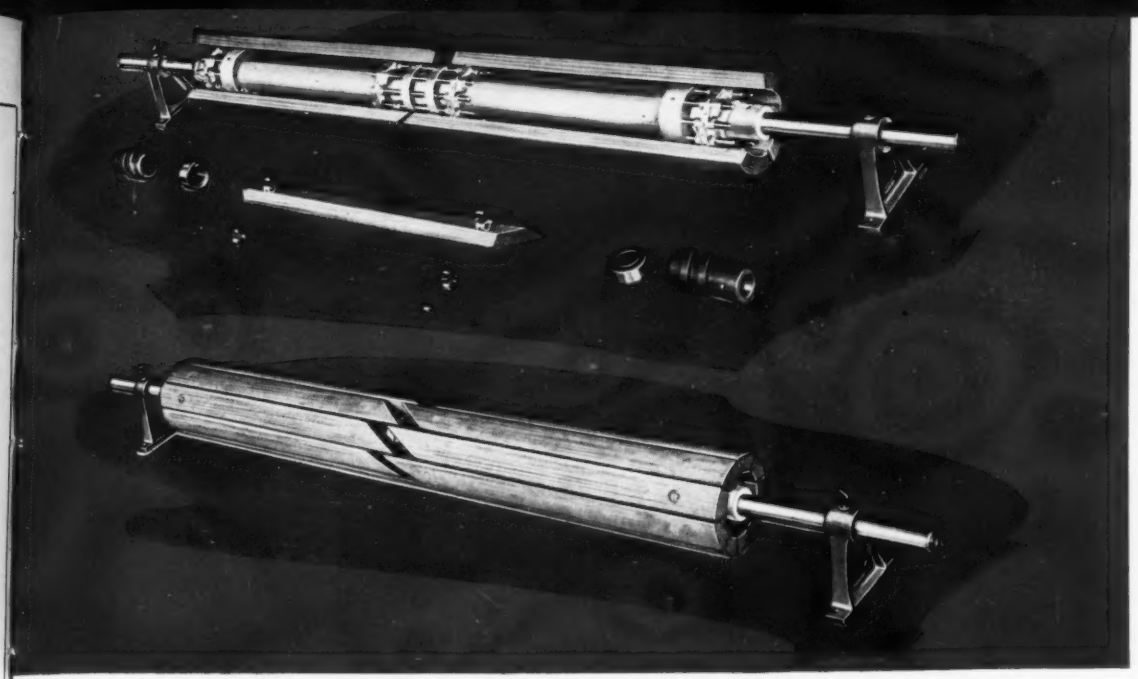
Hardesty laboratory technicians — with long experience in the chemistry of Fatty Acids — are working constantly upon new uses for Hardesty products. During the war they provided many answers to the problems created by the shortage of imported raw materials. Even now, manufacturers who switched to Hardesty products as a result of these shortages use these quality materials in preference to high-priced imports. They have discovered that Hardesty products, available in sufficient quantities to meet manufacturing schedules, give more than better performance. Hardesty products are better priced to fit their cost sheets!

The high quality of every Hardesty shipment is a direct outgrowth of this never-ending Hardesty research. Our fund of technical knowledge and experience plus greatly expanded facilities are ready to fit into your picture. That is why we say it will pay you to keep in touch with Hardesty.

Hardesty Products: STEARIC ACID — RED OIL — GLYCERINE — STEARINE PITCH — WHITE OLEINE — HYDROGENATED FATTY ACIDS — ANIMAL and VEGETABLE DISTILLED FATTY ACIDS.

Write today for information and samples. W. C. HARDESTY CO., 41 East 42nd St., New York 17, N. Y. *Factories:* Dover, Ohio; Los Angeles, Calif., Toronto, Canada.

W·C·
HARDESTY
COMPANY



Twin-segment Expander. Note the sturdy bearing rods for each segment

Patented

BETTER DESIGN makes the DIFFERENCE

All expanders look alike — unless you examine the inside mechanical construction. Before Van Vlaanderen introduced the entirely different bearing construction illustrated here, bearing wear was the cause of expensive repairs and unsatisfactory work.

Van Vlaanderen has increased expander life many times. Expensive repairs are eliminated. Minimum tension is required because the slats cannot tilt as in previous expanders, thus giving full friction contact. Wrinkles are taken out and selvages flattened down with easier handling at entry and better roll up at let-off end.

Nearly all preparing and finishing machines can be equipped with this expander in 5½″ or 7½″ diameters and 45″, 50″, 55″, 60″ and 65″ widths.

VAN VLAANDEREN MACHINE CO. 370 Straight St. **PATERSON, N. J.**

World's largest manufacturer of machinery for processing modern fabrics

Triple-segment Expander with non-sliding center segment

Patented

VAN VLAANDEREN

"That's the last time I tell anyone our dresses are scoured with Alkamine K-50."

Here is the ideal detergent for rayon piece goods—especially 30% wool combinations. Alkamine K-50 accomplishes the wetting-out process in half the usual time. By going rapidly to the center of the fiber, a 1/2-1% solution assures cleaner, clearer results.

Because of increased penetration, less dyeing time is required, and there are no lime soap deposits to cause streakiness. Finishes are more uniform, with a fresh, appealing luster.

If you have a problem in scouring or wetting-out nylon, rayon, cotton, skeins or package yarns, try Alkamine K-50, in the new and improved paste form.

ALKAMINE K-50

Amalgamated Chemical Corp., Phila. 34, Pa. :: Southern Representative: Robert A. Bruce, P. O. Box 35, Greensboro, N. C. : : Makers of a complete line of Textile Finishes, Dyeing Agents, Penetrants and Softeners.

PRINTING ON *Vinyl Film*

NOW DONE SUCCESSFULLY BY MACHINE OR SCREEN

To provide fast-color prints on vinyl film, Aridye technicians have developed a special line of Aridye* Pigment Colors, together with a simple process of application. These new colors, known as the "V Series," are available in a wide range of shades and have already won favor among textile printers for application by either machine or screen printing.

Among the first of these textile printers to adopt the "V Series" of Aridye Pigment Colors was Millbank, Inc., Passaic, N. J., a leader in the field of novelty printing. An example of Millbank's work is the attractive Bow-Knot pattern on the shower curtain (shown above) now being featured by Scranton Lace Co. in its advertising promotion, under the name Craftspun.

Here is how Millbank printed this striking shower curtain design. (1)—The tinted vinyl film was roller printed with Aridye White VI cut with Aridye Clear 6452. (2)—After printing, the film was dried and shelled up on rolls. No ageing or washing was necessary.

The printing of vinyl film in one or more color designs is yet another example of the versatility of Aridye Pigment Colors. Aridye colors are also being widely used on vinyl-coated fabrics, Fiberglas, Vinyon, Saran, nylon, high-tenacity rayon, and other synthetics. On cottons and blends, too, users have found that Aridye Pigment Colors have equally distinctive advantages.

Why not have an Aridye technical service man discuss your printing or dyeing problems with you? Write Aridye Corporation —Pioneers in Pigment Colors for Textiles—Fairlawn, New Jersey.

*Reg. U. S. Pat. Off.

CHECK THESE EIGHT ADVANTAGES

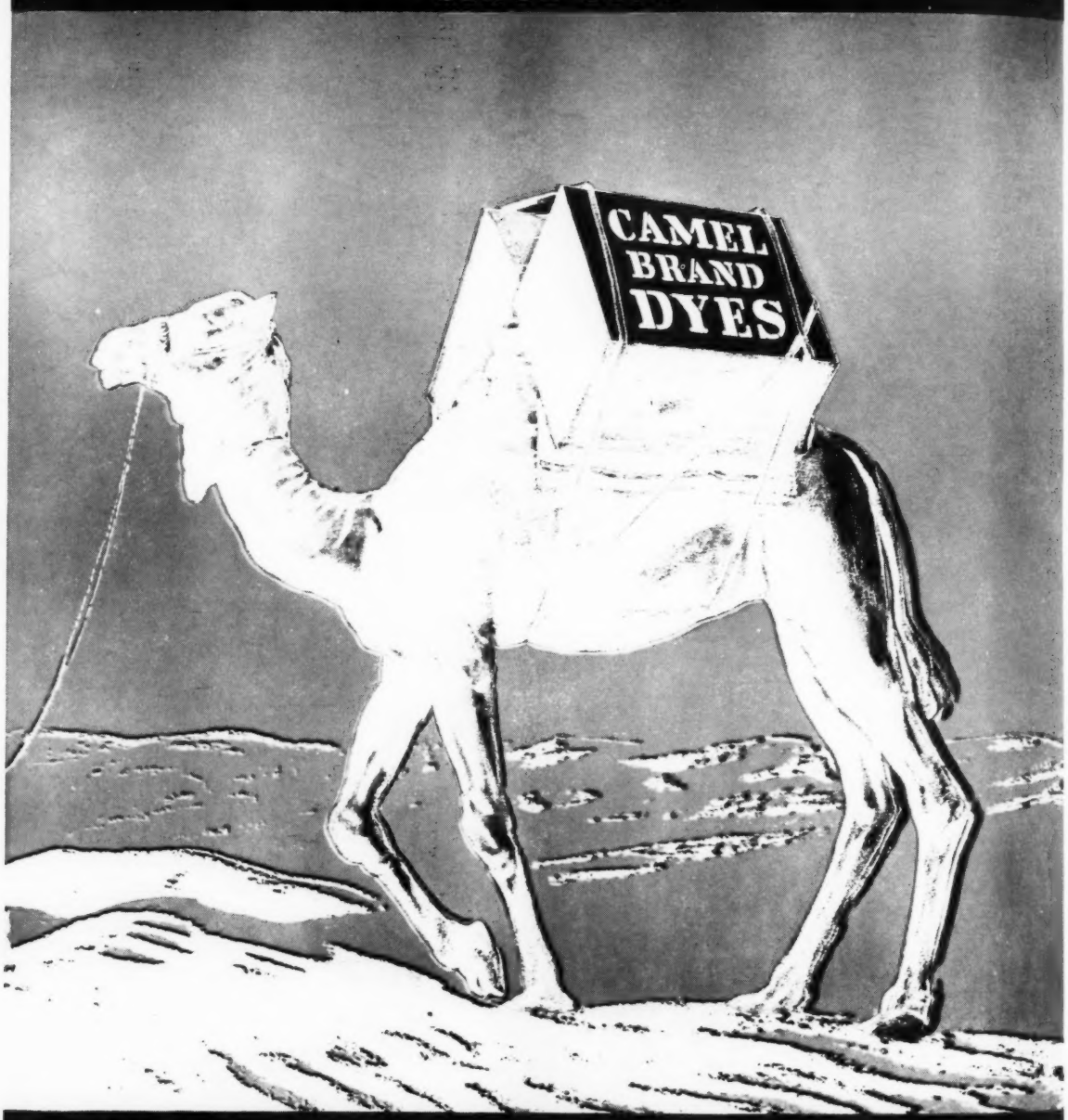
Sharpness of Mark • Exceptional Fastness to Sunlight
Uniformity of Shade • Fastness to Washing • Bright Colors
Economy • Ease of Application • No Impairment of Hand

Pigment colors

ARIDYE CORPORATION • A SUBSIDIARY OF INTERCHEMICAL CORP., FAIRLAWN, N. J. • ROCK HILL, S. C. • PROVIDENCE, R. I.

QUALITY DYESTUFFS

SINCE 1878



JOHN CAMPBELL & COMPANY, Inc.

75 HUDSON STREET • NEW YORK CITY

TELEPHONE: BArclay 7-6228-6229

PHILADELPHIA: BROAD AND SPRING GARDEN STS.

BRANCH OFFICES AND WAREHOUSES:

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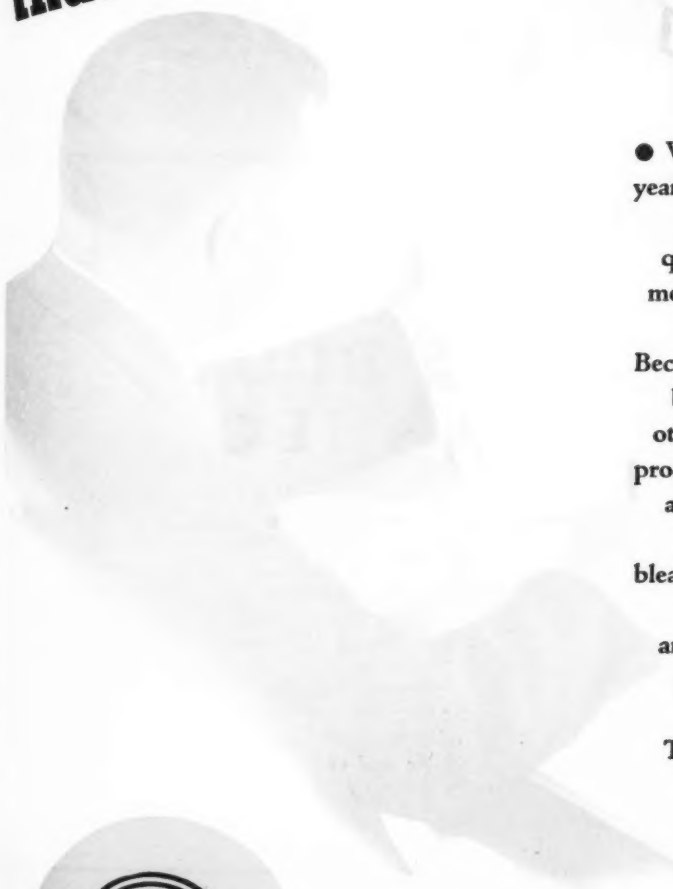

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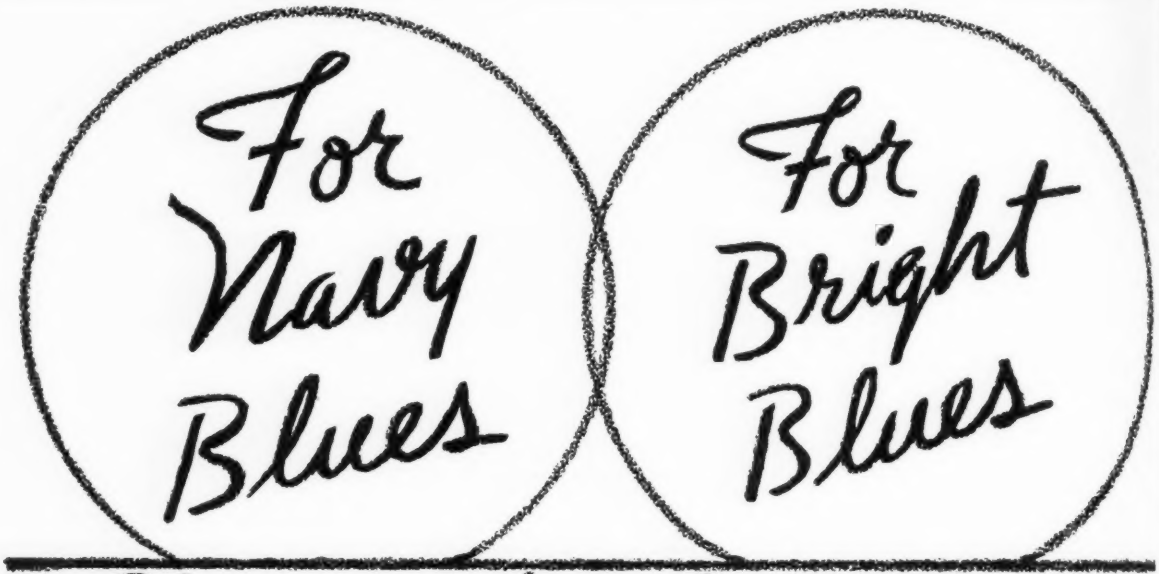

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VOLUME 35 JULY 15, 1946 NUMBER 14

Recent Developments In Rayon Stabilization*

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Superintendent of Chemical Process Section
Research and Development Division
Cluett, Peabody & Co., Inc.

IT MIGHT be well to start this discussion by pointing out that for some time past we have been aware of the need for finishing process to stabilize washable rayon fabrics, i.e. to control the normal tendency of such fabrics to shrink or stretch when laundered. The need is proven by the current widespread consumer dissatisfaction with washable rayons reported by retail stores. A recent nation-wide survey shows that washability of all types of fabrics is rated by department stores as the most important single quality desired by customers. That the problem has not been adequately solved is apparent from the keen interest shown by the large rayon manufacturing concerns in new stabilizing processes and the encouragement and cooperation they offer to anyone whose efforts appear to have merit.

That the yardage of rayon involved is considerable is proven by these figures gathered from *Rayon Organon* (May 1945) showing the production of rayon broad woven goods for the year 1944 to be as follows:

Fabrics	*Yardage*
Filament & spun rayon	154,545,000
100% spun rayon	152,401,000
Mixture (Converted)	101,735,000
100% Filament rayon	111,480,000
Total	520,161,000

Within 5 years, if I may be permitted a prediction, these figures should at least be doubled.

Before narrowing our discussion to the behavior of viscose fabrics on washing, I might point out that there are three broad types of shrinkages as exemplified by three typical fabrics, namely: cotton, wool and rayon.

Fortunately for us, cotton generally takes all of its shrinkage in the first wash. This type of shrinkage is usually referred to as "relaxation" shrinkage. It is this feature that enables one to pre-determine the potential wash shrinkage of a cotton fabric and compressively shrink it. The potential wash shrinkage of most cottons is not too great. This also is an advantage as it results in a pre-shrunk fabric that is not too stretchy and is stable to continued washing.

Wool, as we are aware, continues to shrink with each succeeding wash. This progressive shrinkage is termed "felting" to differentiate it from relaxation shrinkage. We take advantage of this felting tendency in the manufacture of hats, blankets and other "felts."

Rayon is in a class somewhere between cotton and wool. It has a much greater first wash shrinkage than cotton, and does, moreover, exhibit progressive shrinkage on continued washing either in the laundry or at home. This is a primary characteristic of viscose rayon fabrics, *unless* they are given some finishing treatment specifically designed to eliminate this unserviceable performance.

The excessive first wash shrinkage and the fact that the shrinkage is often progressive makes compressive shrinking inapplicable to such fabrics. One of the prerequisites of obtaining a satisfactory pre-shrunk rayon fabric, as with cotton, is that a fabric must shrink only on the first wash, and not in succeeding washes. Also if it becomes necessary to compressively shrink a fabric too many inches per yard due to the excessive first wash shrinkage, a poor fabric results. Such a fabric will exhibit too much elasticity. Such a "stretchy" fabric is difficult to handle in manufacture; that is, it is not suitable for cutting or sewing and does not have a satisfactory degree of stability in the manufactured garment. We, therefore, conclude that viscose rayon fabrics or blends containing viscose rayon in major proportion must be treated during the finishing processes in such manner that excessive shrinkage as well as progressive shrinkage is eliminated.

In order to overcome these difficulties, some plants are first resin treating the rayon fabric to reduce the initial shrinkage and then compressively shrinking the treated fabric. This has not proven completely satisfactory because such a treatment has the disadvantages of imparting a too crisp hand to the fabric. Also such resins tend to hydrolyze on continued washing and usually possess "chlorine retention" properties. This will be more fully discussed later.

We have discussed the effect of the large amount of potential shrinkage of rayon fabrics—now for the cause. We find that viscose fabrics have a large amount of potential shrinkage because of the excessive swelling of the fibers when wet with water or soap solutions, also because of the stretch imparted to the warp yarns during warping, slashing, weaving, and wet finishing.

Normal viscose rayon fibers show as great as a 45 per cent increase in diameter when completely wet with water, that is, in comparison with the diameter of the dry fibers.

The objective of a satisfactory stabilization process for these fabrics can be stated quite simply to be, the elimination of potential shrinkage and stretchiness in fabrics before the cutting operations, without the introduction of undesirable char-

* Paper presented before the June 5, 1946 meeting of the American Association of Textile Technologists at the Builders Club, New York.

acteristics of a chemical or physical nature.

MECHANICAL METHOD

A number of methods of stabilizing viscose rayon fabrics have been investigated. The simplest of these is complete relaxation of the fabric by a purely mechanical manner. While shrinkage can be reduced or even eliminated by handling these fabrics in such manner that they are allowed to shrink in the finishing plant, this, of course, even if it were possible, is not stabilization at all, in the true sense. It does not produce satisfactory fabrics in the case of fabrics having a high potential shrinkage, since stretchiness is thereby introduced into the warp of the fabric because of excessive crimp which develops in the warp yarns when the warp is permitted to shrink an excessive amount. It is interesting to note that with most fabrics we find that for every inch per yard of shrinkage occurring in the warp, there is an increase in the crimp of .7" per yard. Therefore, if a fabric is allowed to shrink 5" per yard in the warp direction, the crimp in the warp yarns is increased by 3.5" per yard, and when this is added to the warp crimp existing in the greige fabric, a very elastic and stretchy fabric results. Such elasticity produces great difficulty in cutting and sewing, and also produces a garment which is not stabilized, but which may shrink when washed if the fabric is stretched during sewing, or which may stretch or "sag" out of shape if the fabric is not stretched during the sewing operations.

SURFACE FINISHES

One approach to stabilization of these fabrics consists of the use of "surface finishes," that is finishes which are applied to a fabric, but are incapable of penetrating the fibers, and which might be called "Surface Fiber Finishes." Such finishes are produced by the use of starch, cellulose finishes and polymerized thermoplastic or thermosetting resins. With the use of such surface fiber finishes, reduction in shrinkage is due only to stiffening and binding together of yarns and fibers. Such finishes are not satisfactory stabilizing agents because the stabilization is not permanent to multiple washing and the texture and hand of the fabrics are stiffened and changed undesirably in many cases.

INTERNAL FIBER FINISHES

Another type of stabilizing finish which has been investigated and practiced could be described as "Internal Fiber Finishes." This covers the treatment of rayon fabrics with aqueous solutions of thermosetting resin pre-condensates, which are condensed or cured *in situ* by a heat treatment. Such finishes are more permanent than the surface finishes since the resins are formed by condensation within the fibers, but we find that this type of finish is still not generally satisfactory because the stabilization is not permanent to washing as performed in the commercial laundry or in the home laundry. With fabrics so treated, the amount of shrinkage obtained on washing will vary with the temperature of the wash water and none of these finishes is entirely permanent to high temperature washing. Moreover, the texture and hand of fabrics treated with these "Internal Fiber Finishes" are often unfavorably affected and undesirable properties are produced in the fabric such as the characteristic which has been described as "Chlorine Retention." By "Chlorine Retention," of course, we mean the chemical absorption of chlorine by a fabric during chlorine bleaching in such manner that the chlorine is not all removed by rinsing and is released in the form of hydrochloric acid during subsequent ironing or pressing to cause either tendering or discoloration.

PERMANENT CHEMICAL TREATMENT

In view of the foregoing drawbacks to most rayon stabilizing procedures, our people early came to the conclusion that the only satisfactory stabilizing treatments are what may be described as the permanent chemical treatments. These are most satisfactory because the effect is permanent, the hand and texture are unchanged, and with the proper type of process, no undesirable properties are introduced into the fabric.

As a result of continuous research work both in the laboratory and in finishing plants since prior to the War, we have developed a stabilization process of the permanent chemical nature for application to fabrics constructed of viscose rayon or predominately of viscose rayon, and in the following discussion we shall explain some of the technical details of this process.

Thinking along these lines, it occurred to us to investigate the class of organic compounds known as "aldehydes" as suitable reagents for stabilizing rayon fabrics. Of the many such compounds under observation, glyoxal was the only one that gave promise. This chemical is the simplest dialdehyde with two aldehyde groups per molecule. Continued work in our laboratory resulted in developing an effective formula and technique for the successful application of glyoxal to accomplish the desired results.

By means of this reaction, swelling of the fibers in water or soap solutions is greatly reduced. Actual tests on fibers from properly treated fabrics show only a 10 per cent increase in diameter when soaked in water, in comparison with the 45 per cent increase in diameter previously mentioned for untreated fibers. This reduction in swelling is brought about by the substitution of oxyacetylene bridges for hydrophilic hydroxyl groups in the molecular structure. Elimination of the excessive swelling eliminates the major part of the potential shrinkage of the fabric, and the small remaining potential shrinkage is eliminated by mechanically relaxing the fabric.

In practice, the chemical treating solution is a water solution containing glyoxal and acid catalyst.

CHEMICAL REACTION

The chemical reaction is accomplished in plant operation by the following procedures. First, the fabric is wetted with the chemical solution to cause the fibers to swell and absorb it. This is accomplished by means of the padder tank or auxiliary immersion tank. Secondly, excess chemical solution is removed from the fabric. Squeezing between the padder rolls is the method used for removing excess chemical solution. Third, moisture is eliminated from the fabric. This is done by drying it on a tenter frame. Fourth, heating or baking the dry fabric to react the glyoxal with the cellulose. This is accomplished by heating the dry fabric in a suitable oven at a definite temperature and for a definite time. Fifth, unreacted chemical and catalyst are removed from the fabric. This is accomplished by washing in soap and soda-ash in a dye beck, or continuous washer.

The essential chemical reaction occurs during the heating or baking operation which is, therefore, the most critical operation.

After the washing operation, the fabrics are slack-dried in order to take up the small amount of potential shrinkage remaining in the fabrics. The fabrics are then steamed on a tenter frame to the proper width.

EVALUATION OF PROCESS

For the evaluation of the laboratory and plant application of this process, we have standardized on the use of the Federal Specification CCC-T-191-a, shrinkage test for cotton. We have chosen this rather severe test method since we believe that many spun rayon garments may easily be mistaken for cotton ones and, therefore, be washed at high temperatures. Naturally, we were searching for a stabilizing treatment which would enable rayons to withstand the "everyday wear and tear" of consumer home or power laundry treatment.

From the plant viewpoint, in actual production the important factors in obtaining entirely satisfactory results with

this process are: the preparation of the fabric, which must be neutral, absorbent and free from any sizing or dyeing assistants; satisfactory impregnation with the chemical treating solution; proper curing conditions; and handling the fabric under minimum tension after it has been cured and washed.

The glyoxal process is primarily applicable to viscose or cuprammonium rayons, that is, to regenerated cellulose rayon. It is not as satisfactory on fabrics made of acetate rayon although blends of viscose and acetate rayon can be treated satisfactorily. In this case, the viscose fibers must constitute the major portion of the blend. We do not consider the process satisfactory for fabrics containing cotton because of the sensitivity of cotton fibers to the acid catalyst at elevated temperatures.

It is especially applicable to fabrics which are to be finished in white because of the absence of chlorine retention. However, there is a slight yellowing produced on such white fabrics. Fortunately, this yellowing can easily be removed by a light bleach. It is, therefore, advisable to bleach the fabric after the treatment rather than before. This operation is combined with the slack washing which always follows the treatment.

EFFECT ON DYES

Recent improvement in the technique of continuous vat dyeing are resulting in a large increase in the yardage of rayon fabrics that are being vat dyed. Having dyed the fabrics fast to washing a satisfactory rayon stabilization process is a "must." In general, this process causes little or no change in shade on vat colors. There is, however, a definite tendency to change many of the direct colors and a proper selection of a suitable range of such colors should be made. In many cases with both direct and vat colors, there is an improvement in light and wash fastness.

Consideration also has to be given to the fabric characteristics. Such details as twist, weight, count and type of yarn have to be considered in properly applying the process to obtain satisfactory stabilization.

ADVANTAGES IN FINISHING PLANT

The process has certain advantages in the finishing plant which we believe are important. These are, the fact that the glyoxal solution, as supplied, is entirely stable in storage and no extraordinary precautions need be taken during storage. Moreover, the chemical treating solution with catalyst added is simple to prepare and offers no special handling problems since it too is stable in storage and can be saved from day to day. The chemical treating solution has practically no odor and very little or no offensive odors are produced during drying or curing of the fabric.

CHARACTERISTICS OF TREATED CLOTH

The treated fabrics have certain important characteristics which should be mentioned at this point. In the first place, glyoxal stabilization has no stiffening or harshening effect on the hand and texture of the fabric. It can be applied without producing any change in the hand or texture of the fabric because there is no formation of material on the surface of the fibers. Any unreacted glyoxal on the surface of the fibers is removed during the soap washing, after the cure. However, if desired, a firm or even a crisp hand can be produced by adding the appropriate stiffening agent to the treating solution. The stabilization produced by the process is permanent to washing at any temperature. Washing operations do not cause hydrolysis of the reaction product of cellulose and glyoxal which appears to be entirely permanent. No offensive odors can develop in the treated fabrics themselves due to the fact that no hydrolysis occurs under any storage conditions. Any unreacted glyoxal is removed during washing and the reacted glyoxal becomes a permanent part of the fiber substance. The stabilized fabrics have no chlorine retention properties when chlorine bleached, and thus white and pastel shade fabrics can be safely stabilized.

While it is not normally necessary or advisable to re-treat a glyoxal-stabilized fabric, this can be done if some error is made in processing such that the desired reaction is not obtained. Reprocessing is possible because no stiffening of the fabric occurs. Moreover, glyoxal stabilization can be combined, under the proper conditions, with other finishes which require much the same mechanical handling, including a curing operation. An example is the combination of certain durable water repellent treatments with the stabilization treatment.

A technical characteristic of viscose rayon fabrics treated with glyoxal for stabilization which is of considerable interest, is the fact that the fabric is not soluble in cuprammonium solution, and will not form cellulose xanthate as would the same fabric before treatment. This would seem to be an indication of fundamental chemical change in the nature of the fibers and in combination with the greatly decreased swellability of the fibers, would seem to indicate that actually a new type of fiber is produced by the reaction.

The chemical reaction and the heat treatments of the process result in some decrease in the tensile strength of the treated fabrics compared with the same fabrics before treatment, but with a reasonable degree of control during the operations, the dry tensile strength loss need not exceed 20 per cent and should average lower than this amount. The wet tensile strength usually shows even less reduction. The treated fabrics also show an apparently lower abrasion resistance than the untreated fabrics, as determined by the Taber Abraser on the dry fabric. However, when collars are made of the treated and untreated fabrics, and these are subjected to multiple laundering operations, the untreated collars show wear much sooner than the treated ones, and after 40 launderings the untreated collars show bad disintegration, whereas the treated ones are still in good condition. This would indicate that the treated fabrics have fundamentally better resistance to washing fluids and the degrading effects of such fluids, and at the same time have better resistance to the type of wear which occurs in the wash-wheel.

I would like to point out that our process is no more laboratory curiosity. It has been used with much success in commercial demonstrations on a wide variety of both filament and spun rayon fabrics in white as well as vat dyed shades.

PLANT EQUIPMENT

A discussion of the plant equipment that we have used in our work on glyoxal stabilization might be pertinent here. It will be best to discuss the equipment in the order that it is used in plants properly equipped to carry out the process.

We have used both the two roll and three roll padders. With the two roll padder, we have used an auxiliary booster box or a skying roller or both to insure adequate impregnation. We have found that the time of impregnation is an important factor and varies with the type of fabric treated. We try to obtain a 100 per cent pickup based on the dry weight of the fabric.

A covered tenter frame 60-90 feet long equipped with automatic temperature controls is best suited for drying the fabric. The fabric should come from the tenter frame just dry so that no curing begins at this stage. As a general rule the fabrics are framed to the desired finished width.

Curing or baking may best be accomplished on a loop drier, net drier, airlay drier or roller type drier. Whichever type of machine is used, should have a good automatic temperature control. Since this is the critical stage of the process, adequate control must be exercised to prevent over or under curing. The curing schedule may be adjusted according to the time and temperature which can be obtained on the individual machine. The time of cure being, of course, inversely

proportional to the temperature. Some provisions for cooling the cured fabric at the exit end should be provided. This may consist of a cooling can, fan, or skying arrangement.

Some plants have the padding, drying and curing machines operating as a continuous range. The range used for applying permanent types of water-repellents can be adapted to our process to secure glyoxal stabilization with the necessary time and heat controls.

After curing, the fabrics should be washed in synthetic detergent and soda ash to neutralize the fabrics and remove excess unreacted chemicals. This can best be done on a battery of slack loop continuous dye becks or on a continuous open width washer. Unless the fabric is to be bleached, a relatively short wash is all that is necessary.

From this point on, care must be taken in handling the fabric slack to avoid lengthwise tension. This is done in order to finish with a fabric that comes within our shrinkage tolerance of two per cent.

The fabric after washing is usually opened to width and vacuum extracted, after which it is slack dried on a loop, airlay or net drier.

At this point it is often advisable to make a preliminary wash test to determine the proper width for final framing. This wash test, incidentally, serves as a check on the remainder of the finishing operations, since we can tell whether or not excessive tensions have been applied. This is done by comparing these wash results with those obtained on the final test.

After slack drying, the fabrics are steamed and framed to the indicated width.

The fabrics may be decatized or calendered, if necessary, but here again, excess tensions should be avoided. This is also true of the examining and tubing operations.

While at first these steps may seem complicated, our experience has been that plant personnel soon fall in line with the proper method of procedure.

Service Test of Copper-Treated Cotton Sandbags

J. D. DEAN, W. B. STRICKLAND, and W. N. BERARD
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SANDBAGS treated with fungicidal compounds have been subjected to service tests at the Southern Regional Research Laboratory for the purpose of securing practical information about the relative effectiveness of various protective treatments. It was believed that tests of this kind would also afford a useful check on the dependability of soil-contact methods for evaluating the rot-resisting properties of such compounds, particularly in respect to the soil-burial method employed at this Laboratory and described in an earlier paper.[1] This paper presents the results of a test that was regarded as the most generally informative of the series conducted.

COPPER COMPOUNDS APPLIED AS ROTPROOFING TREATMENTS FOR COTTON SANDBAGS

Copper compounds have been preferred in military service for rotproofing jute and cotton sandbags. Copper naphthenate, cuprammonium (hydroxide or carbonate) and copper ammonium fluoride are listed in U. S. Army Specification No. 100-17[2] as permissible treatments for such use. In work conducted at this Laboratory, a copper naphthenate-creosote mixture, and also a cuprammonium-creosote emulsion, both formulations recommended by Armstrong[3] had proved to be effective treatments. In addition to the naphthenate, several other members of the copper soap group had been proposed as rotproofing agents, particularly the oleate, the resinate, and the tallate†. These treatments were therefore of special interest for service trials. The list finally selected included eight such compounds, all of which were applied to gray 7-oz. cotton osnaburg in concentrations adjusted to give definite equivalents of metallic copper, calculated as a percent of the dry weight of the goods. The individual treatments and concentrations, selected in accordance with recommended practice, were as follows:

(1)	Copper naphthenate	1.0% Cu
(2)	Cuprammonium carbonate	1.5% Cu
(3)	Copper ammonium fluoride	1.0% Cu
(4)	Copper naphthenate plus creosote	1.0% Cu, 15.0% Creosote
(5)	Cuprammonium-creosote emulsion	1.5% Cu, 50.0% Creosote
(6)	Copper oleate	1.0% Cu
(7)	Copper resinate	1.0% Cu
(8)	Copper tallate	1.0% Cu

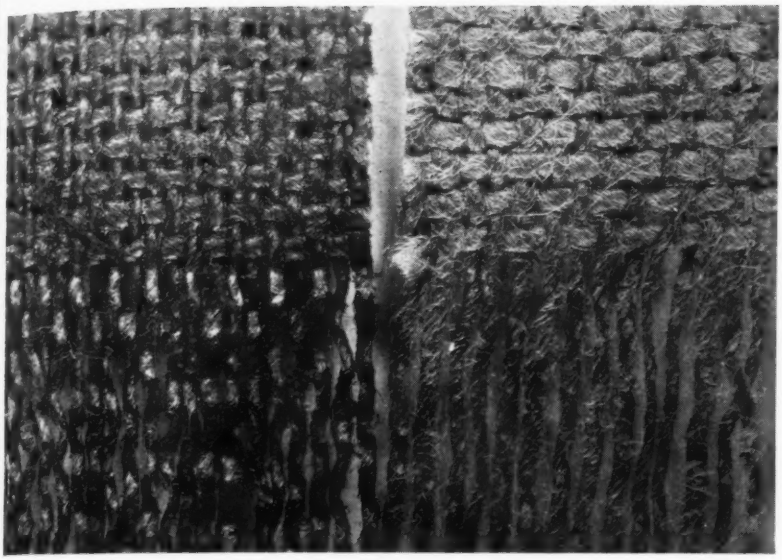
The fabric was impregnated by ordinary padding methods, passing it in open width through a bath of the treating liquor and then between squeeze rolls before drying. Bath concentrations and roller pressures were adjusted to give the desired take-up of solid material, and in all cases copper content of the dried fabric was checked by chemical analysis. To insure uniformity of treatment sufficient initial yardage was run with each proofing agent to supply all the bags required for the test. The copper soaps were dissolved in Stoddard Solvent, in one case [Treatment (4)] with the addition of a calculated amount of creosote to the solution. Copper ammonium compounds (2) and (3) were applied from water solutions, while Treatment (5) was in emulsion form.

In padding, an attempt was made to secure the best possible penetration of the yarns, a detail that requires consideration when applying these copper compounds to a naturally water-repellent fabric. The importance of even distribution of protectives through every part of the treated fabric was emphasized by Thaysen and associates[4], who stated that this requirement was not fulfilled in any of the commercial preparations they examined. Neither the solvent solutions of copper soaps nor the cuprammonium-creosote emulsion presented any difficulty in this respect, but the cuprammoniums from water solution required the use of wetting agents to obtain satisfactory results. Even with this assistance, complete penetration of the yarns was lacking in the copper ammonium fluoride treatment (3), a fact probably responsible for the relatively poor record made by this compound** in the subsequent test.

* One of the laboratories of the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Department of Agriculture.

† The copper salt of fatty acids contained in tall oil, a by-product of the wool pulp industry.

** In contrast, better penetration has been observed by this treatment when applied to jute burlap, which probably explains a better performance than that shown here on cotton osnaburg.



A B

Figure 1
A. Imperfect Penetration. (Cuprammonium Treatment—2.8% Cu)
B. Uniform Penetration. (Copper Naphthenate Treatment—1.0% Cu)

The extent to which degree of penetration influenced the effectiveness of these copper compounds in protecting cotton cloth had been made clear by many tests of treated samples. For example, a gray osnaburg commercially treated with cuprammonium displayed poor resistance to rotting in soil burial, although analysis showed it to contain 2.8% metallic copper. When the filling threads were partly removed from a small cutting of the original sample and the copper compound blackened by exposing the specimen to the action of hydrogen sulfide gas, white unstained areas visible along the yarns proved that the cuprammonium had failed to penetrate at their points of intersection. The treatment was thus largely on the surface, and as a result the fabric was imperfectly protected against the attack of microorganisms. Figure 1 shows the stained specimen referred to, contrasted with a similarly stained specimen of copper naphthenate-treated osnaburg in which uniform penetration was obtained.

EXPOSURE CONDITIONS OF SERVICE TESTS

The degradation suffered by individual sandbags when exposed in built-up stacks or revetments varied so greatly with their position that only a general opinion could be formed under such conditions of the protection afforded by different proofing agents. On the other hand, when the bags were laid flat in rows on fertile soil the bottoms were equally exposed to biological attack. Regular inspection could then establish with reasonable accuracy the dates at which rotting in this area had so degraded individual bags that they collapsed on handling. By using several replicate bags for each proofing treatment in the test, it was possible to obtain an average service record in days for each type.

In the flat exposure test the lower half of each bag, in direct contact with the soil, was subjected chiefly to biological rotting, while the upper part was exposed to the action of weather. Since the effects of the latter were found to be relatively much less severe, the test was in effect equivalent to soil burial conducted under natural conditions of exposure. This type of test was therefore considered more suitable for checking results secured in accelerated soil burial and was consequently selected for the practical evaluation of the copper rotproofers on cotton osnaburg.

The treated fabric was cut and made up into sandbags of standard army size, approximately 26 inches long by 14½ inches wide, sewn with copper naphthenate-treated thread. Previous experience had emphasized the wide variations in rate of rotting than may occur in identically treated bags if exposed at different times of the year; therefore to average out as far as possible these seasonal variations it was planned to expose the bags in four uniform lots, one each in spring, summer, fall, and winter. Since all lots were to contain 40 bags, including 5 replicates of each treatment, a total of 160 treated bags was required, plus 5 untreated specimens for control purposes. The bags were filled with clean sand and laid flat in rows of 8, a controlled randomized method of distribution insuring that one replicate of each treatment occupied a different position in each row. A space large enough to accommodate all four lots was laid out in the Laboratory grounds and cleared of grass, weed roots, and the like, to expose a fresh surface for the test. The soil was alluvial in origin, composed chiefly of clay and loam, and contained a large amount of decaying woody matter. The average organic content was 10.5% and the pH of samples taken over the entire area ranged from 6.5 to 5.5. Naturally fertile and slightly acid in reaction, the soil proved capable of exerting severe biological attack on cotton fabric.

The first lot of 40 bags was exposed on March 1, 1944, followed by successive lots on the first of June, September, and December of that year. Included with the September lot were five bags made from untreated osnaburg. Soil moisture and pH were checked at regular intervals, and temperature at the point of contact with a master bag was continuously chartered by means of a recording thermograph. All bags were inspected weekly, and termination of the useful life of each was noted at the date when, on being raised to a vertical position, the underside broke out sufficiently to permit a serious escape of sand. At the conclusion of the test it was thus possible to compile average service figures for 20 bags of each type that had been exposed through a variety of climatic and soil conditions. The last bag was withdrawn October 1, 1945, the entire test having required a total of 19 months. Service records are summarized in Table 1.

TABLE 1
Effective Service in Days of Rotproofed Sandbags
(Av. Soil Temperature During Test—72.1° F)
(Av. Soil Moisture During Test—27.6%)

Treatment	*Lot No. 1* March*	*Lot No. 2* June*	*Lot No. 3* Sept.*	*Not No. 4* Dec.*	*Average of 20 Bags*
1. Copper Naththenate	133	78	159	144	128
2. Cuprammonium Carbonate	121	80	162	147	128
3. Copper Ammonium Fluoride	92	53	74	119	85
4. Copper Naphthenate + Creosote	155	217	325	203	225
5. Cuprammonium-Creosote	166	153	300	267	222
6. Copper Oleate	107	73	73	120	93
7. Copper Resinate	78	58	27	69	58
8. Copper Tallate	99	120	85	116	105
9. Controls	—	—	11	—	11*..

* Figures represent average of 5 bags.

RELATIVE EFFECTIVENESS OF THE VARIOUS TREATMENTS

The above figures emphasize the extreme variations that frequently characterize the degradation of cotton cellulose by natural agencies. Since during several winter months the biological activity of soil in the vicinity of New Orleans is considerably retarded, it was to be expected that bags exposed during the fall and winter would have a longer average service life than those of the spring and summer lots. While this proved generally true for the more highly resistant treatments, among the less effective some striking exceptions were evident. These and certain other observed eccentricities, such as the good durability of the copper tallate-treated bags in the June lot when compared with the relatively poor performance of the naphthenate and cuprammonium-carbonate treatments in the same lot, were not explainable in the light of any available information about these compounds. On the whole, however, it was believed that the overall average service figures afforded a fairly dependable measure of the protection given by the different proofing agents when applied to cotton cloth and exposed under severely degrading biological conditions.

Since copper naphthenate had been used in testing rotproofed fabrics by the accelerated soil-burial method as a reference or yardstick treatment by which to measure the rot-resisting powers of other proofing agents, it was of interest in this service test to classify the effectiveness of all treatments on the basis of copper-naphthenate performance. If an arbitrary value of 100 units was assigned to the latter and proportional values, based upon individual service records, calculated for the others, they could be ranked in the order shown in Table 2.

TABLE 2

Evaluation of Treatments as Compared with Copper Naphthenate

Order	*Treatment*	*Service Rating*
1	Copper naphthenate—creosote (4)	176
2	Cuprammonium—cresote (5)	173
3	Copper naphthenate (1)	100
4	Cuprammonium carbonate (2)	100
5	Copper tallate (8)	82
6	Copper oleate (6)	73
7	Copper ammonium fluoride (3)	66
8	Copper resinate (7)	45
	Untreated controls (Sept.)	9

The figures shown in Tables 1 and 2 are evidence of the superior resistance displayed in service by the creosote-containing treatments. They also show that the cuprammonium carbonate was about equal to the straight copper naphthenate in effectiveness, while the other compounds tested received lower rankings in varying degrees. These results were in good general agreement with those obtained by the accelerated soil-burial method, which had indicated the creosote treatments to be definitely superior to copper naphthenate alone in resistance to rotting, the cuprammonium carbonate to be approximately its equal, and the others to be inferior. In the service test, however, the copper tallate treatment approached closer to the copper naphthenate level of resistance than had been anticipated from soil-burial results, and the performance of the resinate-treated bags was unexpectedly poor. Service rankings of the copper oleate and copper ammonium fluoride treatments did not depart significantly from their previously determined resistance values. Lack of closer agreement between the two tests in the case of some of the less resistant treatments may have been due to the fact that these are more readily influenced by environmenal factors, their performance records therefore being more likely to vary if they are tested under differing soil and climatic conditions.

CONCLUSIONS

As conducted under the subtropical climatic conditions of New Orleans, the service trial here described may be fairly characterized as a performance test in which rotproofed cotton sandbags were subjected to severe biological attack. The complete degradation of the untreated bags included with the September lot after only 11 days of exposure demonstrated both the necessity for protective treatments under such circumstances and the relatively high degree of resistance possessed by several of the treatments employed.

In view of the results secured, it was felt that this service test afforded valuable practical information about variations to be expected in the utilization of copper rotproofing agents, while at the same time it confirmed the dependability of the accelerated soil-burial method in selecting those of the greatest effectiveness.

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Celanese-Fortisan Dyeing and Printing*

A. MELLOR

THE general conditions and dyes required for processing Celanese are well-known, but the present technique for handling Fortisan as a fabric for underwear and linings is not so widely known, since it is a new fiber which has up to the present been confined to the making of parachute fabrics.

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Inasmuch as this article originally appeared in an English publication various products are referred to by their English trade names. Similar products, under other names, are available here.

CELANESE

The important points in processing Celanese plain and crepe fabrics will be dealt with before proceeding to Fortisan, which is a regenerated cellulose fiber.

As is the case for most woven fabrics, the processing falls into two main classes, that used for flat or plain woven fabrics, e.g. satins, twills, jappes, etc., for linings, outerwear and furnishings, and that for crepe fabrics intended for underwear, dress wear, furnishings and linings.

It is desirable to emphasize the importance of care of grey fabric prior to dyeing. In order to achieve the best results and freedom from faults, raw or grey fabric

should be handled with care and kept free from creases, oil and dirt. While in storage awaiting processing, it should be wrapped in stout paper and kept in a cool dry room.

The first operation of importance and of especial interest when handling Celanese is that of precreping or embossing. Advantage is taken of the thermoplastic properties of cellulose acetate to achieve a permanent figured appearance by the application of heat, pressure and moisture. The usual form of design applied is the small, all-over type, resembling a crepe. Such embossing is usually applied to satin-faced flat crepe fabric and to plain satin. For those fabrics having natural creping properties, e.g. cellulose acetate warp/viscose crepe weft, an embossing pretreatment is sometimes given to modify or regularize the type of figure on boiling off. It is essential for uniform results to have fabric of uniform humidity; excess moisture due to water-spotting, or uneven conditioning if the process is to be applied after dyeing, causes glazed weakened areas. The most satisfactory machine for this precreping is a light two-bowl calender fitted with a super-elastic bowl geared to give accurate meshing with the engraved roller. It will readily be appreciated that the circumference of the engraved steel roller must be a simple multiple of the circumference of the paper bowl and accurately geared, otherwise the slippage, which must take place during running, will cause severe degradation of the fabric and the paper bowl.

In order to preserve the uniformity and sharpness of design when precreping grey fabric, it is necessary to wash down the bowls frequently with clean water, or soap and water, so as to remove the size and oil which accumulate in the engraving during running.

DYEING PLAIN FABRICS

The 100 per cent Celanese plain fabrics, e.g. satins and twills, which show little appreciable shrinkage, are first padded, if the fabric is of loose weave and shows any tendency of fray or slip, through a solution of Celascour or Turkey Red oil at 80°C. After this process the batch is allowed to stand for a few hours, preferably overnight, after which it goes to the dye jigger where the Celascour is removed with warm water and may be collected for general scouring purposes. This treatment greatly improves the firmness of the cloth against fraying or slipping.

Dyeing must be conducted below b.p. if luster is to be unimpaired, and also as a safeguard against extension due to warp tension during processing. Dyeing in covered machines is an advantage where listing trouble is experienced, since by protection from the surrounding cool air, temperature difference between the lists or selvedges and the middle of the batch is appreciably reduced.

After dyeing, the goods are washed off well and hydroextracted in open width or carefully mangled. They are then dried, preferably in hot air on the stenter, to the required finished width.

STEEPING CREPE FABRICS

The winch dyeing machine or dyebeck is the general utility machine, for which requisite attention it is suitable for processing all types of fabric. In general, however, the winch is used for crepe fabrics, and for those which require a fair degree of shrinkage to give the desired handle and appearance in the finished state.

In order that the fabrics may be in the correct condition for processing in rope form on the winch, a preliminary steeping is given. This allows the fabric to shrink and eliminates all internal tensions while the fabric is in controlled open width. Advantage is often taken of the steeping process, in the case of Celanese, to modify the luster of the fabric, but in all cases the steeping temperature should be at least 10°C. above the subsequent dyeing temperature.

The steeping bath consists of a rectangular wooden vat fitted with closed and open heating coils. The bath should be of such a size as to permit fabric, strung from its selvedge, to be suspended in it without touching the steam coils or the false bottom covering these coils. The steeping liquor usually contains 5 g. soap per l., and the raw or grey fabric is entered into this solution at the appropriate scouring temperature.

For fully bright finish the maximum permissible temperature of this soap bath is 85°C. For a full deluster finish, 98°-99°C. is required; by steeping at temperatures between 85°C. and 98°C. the finished appearance of Celanese is varied from pearl to full deluster.

In order to accentuate and facilitate the achievement of a full deluster finish, the addition of 1 g. phenol per l, can be made to the 5 g. per l soap bath, maintaining maximum temperature.

If phenol is used as a delustering assistant, the fabric should be washed off as thoroughly as possible and must not be given a chlorine bleach, otherwise the resulting odor of chlorophenols will contaminate the finished fabric and be particularly noticeable whenever a garment made from such a fabric is taken from its covering or box. The use of phenol should be avoided if at all possible on account of the grave liability of loss of fabric strength.

The steeping liquor should not be allowed to boil, because the liquor movement would lift the immersed fabric and cause creases which it may not be possible to remove subsequently.

If the raw or grey fabric is known to contain a gelatin size, steeping for 1 hr. in cold water should precede entry into the soap steeping or shrinking vat. For normal steeping, 1.5-2 hr. at the appropriate temperature is usually sufficient.

After entering the steeping bath, the fabric is moved fairly frequently during the first 30 min. If the fabric is in hank form and supported by two sticks, the hanks should be turned, as for yarn scouring, as rapidly as possible for 30 min., and afterwards less frequently, during the whole steeping period. If immersion from strings is employed, the fabric should be moved along the length of the bath by sliding the sticks steadily on the bath sides.

At the conclusion of the steeping process the fabric should be lifted carefully, preferably by overhead lifting tackle, and entered into clean water at about 40°C. If required immediately on the dyeing machine, the fabric should be turned gently once or twice until thoroughly cooled to the bath temperature, when it can be lifted and moved to the winch machine. If the fabric is not required immediately, it is best left in the clean water bath until shortly before it is required for loading on to the winch.

DYEING OF CREPE FABRICS

The linear speed of the winch for normal medium-weight Celanese fabrics is about 40 yd. per min., but it is a distinct advantage if the winch speed is readily variable between 30 yd. and 60 yd. per min. Certain fabrics, owing to their weight and construction, must be processed more slowly than normal, otherwise the pull through the liquor will cause rope creases which are almost impossible to remove during subsequent finishing.

The steeped fabric is loaded in single rope form. The rope length may vary from 40 to 80 yd., but every effort should be made in the initial batch preparation to arrange the fabric lengths so that the ropes on the machine do not vary by more than about 10 per cent.

The normal ratio of dyeliquor to fabric is 30:1, but some cloths can be readily processed with a volume ratio of 20:1.

After loading 2 g. soap per l (and/or 0.25-1g. sulfated fatty alcohol per l) is added and the fabric run for 5 to 10 min. while the dyes are being dissolved.

SRA-type dyes may be used for 100 per cent Celanese, the selection depending upon whether the fabric is for dress wear, furnishing, fast-to-washing, fast-to-rubberproofing, or discharge printing.

The first addition of dye should not be more than two-thirds of the full recipe and should be made at about 40°C. The bath is then heated to between 65°C. and 85°C., depending on the fabric construc-

tion; the maximum dyeing temperature which permits successful finishing should be used, since the fabric is thereby brought to shade more quickly and levelled more easily.

For the dyeing of Celanese mixture fabrics, SRA-type dyes may be used for the Celanese, together with direct cotton dyes or neutral acid dyes in the same bath for the cotton, viscose rayon, wool or silk.

After the required shade is achieved, the fabric in the bath is cooled down to 40°-50°C. before transferring into trucks or on to scrays for transport to the hydro-extraction machine.

DYEING FOR DISCHARGE PRINTING

There are two methods of processing fabrics intended for discharge printing, viz. (1) the saponification process, where dischargeable direct dyes or developed direct dyes are used for the dyeing; and (2) the process in which the cellulose acetate is kept in the unsaponified state, using dischargeable SRA-type dyes.

The saponification process is now used only for mixture fabrics of cellulose acetate and viscose rayon or cellulose acetate and cotton. In this process an acetyl value of 40-50 is desirable for dark and medium shades, so as to obtain sufficient affinity for the dye, together with freedom from rubbing. For pale underwear shades an acetyl value of 40-50 is satisfactory.

Saponification can be conveniently carried out on the winch before dyeing by using soda ash, the amount of which will be controlled by the fabric construction. It will be appreciated that a fabric made from fine filament yarn will present a much greater surface area to the saponification liquor than one made from coarse denier yarn, and so will saponify more rapidly. The amount of soda ash necessary to saponify two differently constructed fabrics varies directly as the surface area of the Celanese exposed, other conditions being equal. A typical recipe for 50/50 Celanese/viscose rayon, of which the Celanese is made from 75 den. 20 fil. yarn, would be 28 per cent soda ash on the weight of fabric, running for 1.5 hr. at 80°C., with a volume ratio of 40:1; this should give a fabric with an acetyl value of 41.

After saponification the liquor is run off, the dyebath made up and the fabric dyed in the normal manner as for viscose rayon, using suitable dischargeable cotton dyes.

When dischargeable SRA-type dyes are used for 100 per cent Celanese, the dyeing procedure is exactly as for normal Celanese dyeing, the following dyes being suitable for this process—

SRA Yellow IV (B.C.), SRA Orange III (B.C.), SRA Scarlet III (B.C.), SRA Red VIII (B.C.), STA Rubine IX (B.C.), Setacyl Discharge Blue G Supra (Gy.), Dispersol Yellow 3G (I.C.I.), Celliton Discharge Blue 5G (I.G.), Celliton Discharge Pink BRF (I.G.), and Celliton Discharge Rubine BBF (I.G.).

For navy blue, SRA Discharge Base VI is diazotized and coupled with Navy Developer I; when shaded with SRA Yellow IV, this gives a good black.

Some knowledge of the ease of dischargeability of these dyes is necessary, and care should be exercised to achieve as good a balance of dischargeability of the component dyes in the recipe as possible. This will be of great assistance to the printer.

The blue dyes mentioned discharge most easily, and dyeings in which they form a major part are liable to facing and streaking of the blue before the more resistant dyes are discharged. The use of Resist Salt or similar protective agent retards the general discharge.

SRA Red VIII and SRA Rubine IX are very satisfactory, being fast to washing and light and readily dischargeable, but they tend to give bluish-whites if oxidizing agents are used in the washing process, owing to the formation of Indulines.

DISCHARGE PRINTING OF 100% CELANESE

Early attempts to discharge 100 per cent Celanese employed stannous chloride as the reducing agent, with selected SRA-type dyes as the illuminating colors. This process had considerable limitations and was later replaced by the use of zinc sulfoxylate - formaldehyde (Decroline, Vacolite) as the reducing agent, with selected vat dyes as the illuminants. The discharges by this process were not very good and the color yield of the vat illuminating dyes was poor. Barium thiocyanate, a swelling agent for the Celanese, has been used in the paste containing vat dyes, and Formosul has been substituted for Decroline. These alterations have given better, but still only moderate, results.

Tests showed that the print pastes made up with barium thiocyanate turned acid fairly quickly, and better results were obtained when soda ash was added to correct this acidity. It was also found later that barium sulfoxylate - formaldehyde was a suitable discharging agent, but this also required the presence of a swelling agent in order to give satisfactory results.

The use of barium sulfoxylate-formaldehyde, formed by adding barium chloride to Formosul, together with sodium thiocyanate as the swelling agent, gives a very stable print paste and one in which the amount of thiocyanate swelling agent can be varied to suit the ground shade to be discharged.

The addition of soda ash to the color paste is desirable for illuminated discharges, but is of doubtful value for the production of white discharges. The presence of too much alkali inhibits the discharge. A typical discharge paste is—

20 per cent Formosul, 5 per cent water and 15 per cent gum, to which is stirred slowly 12.8 per cent barium chloride dissolved in 7.2 per cent water and 15.0 per cent gum tragacanth, followed by 5-20 per cent sodium thiocyanate dissolved in 5 per cent water.

Such a print paste gives a good black with selected Durindone dyes when 4 per cent soda ash is added, but it is not suitable for fine line discharge work. Where fine lines have to be printed it is better to substitute zinc sulfoxylate-formaldehyde (Decroline, Vacolite or Redusol) for the Formosul and make the thiocyanate addition about 15-20 per cent.

Many of the common vat dyes can be applied by the Formosul/thiocyanate recipe and give 60 per cent yields, which can be improved to 80 per cent on re-steaming. The Decroline process is slightly inferior to the Formosul process.

Normally, the printing recipe is adjusted to agree with standard steaming conditions, and variations in steaming should only be slight, so as to cater for minor differences which cannot be allowed for in the color recipe, e.g. variations in dischargeability from shade to shade, repeat dyeings, pre-padding process, wear of printing rollers, and pressure of printing rollers. Satisfactory steaming conditions established for vat dye prints are quite suitable for vat dyes applied by the Formosul / thiocyanate / carbonate method. A temperature of 225°-230°F. is very satisfactory, with ± 5°F. as a permissible variation. Under bulk conditions it is often found beneficial to re-steam, since any irregularities in the steamer are thereby levelled out.

Drying after printing is important, for under-drying can be responsible for "sweating," with subsequent irregular discharge, whilst over-drying inhibits the discharge without apparently hindering the fixation of the vat dyes.

After steaming, the fabric is allowed to lie for 24 hr. to enable the vat dyes to reoxidize. Oxidizing agents should not be used since they impair the white, but, if for any reason such a process is considered necessary, treatment for 5 min. at 50°C. in the following bath is preferred—sodium percarbonate 0.5 per cent, or 5 g. per l., and Alcos SP 0.5 per cent, or 5 g. per l. However, it is always advisable to test a sample from bulk before using such a process.

FINISHING

The drying of both plain and crepe fabrics is invariably carried out on a stenter, whereby the fabric is dressed to its required width. Where additional finishes and softening oils are considered bene-

ficial from past experience, it is advisable in the initial drying to dry slightly under the final required width and with some over-feed on the stenter, or better still, without warp or weft tension on a brattice or loop drying machine.

The finishing processes proper may consist of hot or cold calendering, pressing, breaking, decatizing, or Palmer treatment, and the use of these processes depends upon the final finish required, which is shown by the customer's sample.

Additional or special finishes are readily obtained on Celanese, e.g. moire or watered effects, cire and embossing.

After the full finishing treatment, during which the required width, shrinkage and handle have been achieved, the fabric is passed forward for final careful inspection.

ACID FADING

One source of complaint against dyed cellulose acetate has been that of change of shade, especially with shades containing a blue component, when stored in rooms heated by gas radiators. Such a fault is known as "acid fading," and many protective agents have been recommended and used from time to time.

For those fabrics which are frequently laundered when made up into garments, e.g. underwear fabrics, the main requirement is to give protection during the storage period. This may be simply and conveniently done by including in the finish 0.5-1 per cent triethanolamine on the weight of fabric.

Much can be done to avoid acid fading weakness by choice of suitable dyes. SRA Blue IV and SRA Brilliant Blue IV have excellent affinity for cellulose acetate and are good levelling dyes, but they are weak or sensitive to acid fading. Therefore, where furnishings and linings are to be dyed, such dyes should be avoided, and those of better resistance to acid fading, e.g. SRA Fast Blue FS2 (B.C.), or its equivalent, Duranol Blue 2G (I.C.I.), chosen.

SRA Fast Blue FS2 and SRA Fast Violet Blue FSI give dyeings which have a good resistance to acid fading; moreover, when these dyes do fade they change to a flatter and duller shade, rather than to the objectionable cherry-red shade given by SRA Blue IV.

There is at present under test on a semi-bulk scale another SRA Blue, which, although slightly redder than Duranol Blue 2G, is still more resistant to acid fading. It is hoped that the intermediates required for the manufacture of this dye will soon be freely available so that it may be available for use as the standard blue dye on Celanese for fast-to-light work.

These dyes require a higher dyeing temperature for satisfactory exhaustion and are therefore more difficult to level, but their use is well worth while if a long storage period has to be faced, or if it is expected that the fabric will be used for long periods without washing.

APPLICATION OF ACID DYES TO CELANESE

As a means of overcoming acid fading, much attention has been given to the application of selected acid dyes to Celanese. Acid dyeings can, if the correct dyes are chosen, be guaranteed completely resistant to acid fading. Certain features make this process very attractive, viz. it is quick and continuous and the shades are highly resistant to laundering. The dyes found to be more satisfactory are those of the aggregated type, e.g. Chrysophenine GS (I.C.I.), Xylene Milling Blue 6G (S.), Croceine Scarlet 3BS (I.C.I.) and Azo Rubinole 3GP (S.).

The method of application is from solution by means of a light 2- or 3-bowl pad mangle, the dye being dissolved in some solvent or combination of solvents which swell cellulose acetate, thereby allowing quick and efficient penetration to take place. The Celanese Corporation of America have processed several hundred thousand yards of dark and medium shades by such a process with excellent results, without the necessity of topping to shade.

Briefly, the process is as follows—The fabric to be processed is first scoured thoroughly to remove all size and oil, and then dried and batched. The selected acid dyes (or, if required, a mixture of SRA and acid dyes) are pasted with ethyl alcohol, and a little warm water then added to assist solution. The final padding liquor should contain 75 parts alcohol, 25 parts water and some additional swelling agent, e.g. 20-40 g. sodium thiocyanate per 1. The temperature of this padding liquor should be about 20°-28°C.—certainly not higher than 30°C.—and the rate of padding 20-30 yd. per min. Individual fabrics may require varying amounts of sodium thiocyanate in order to effect satisfactory penetration.

At speeds of 20-30 yd. per min., the fabric is allowed, for example, 10 yd. travel before the final squeeze through the pad mangle. By this means navy blues and blacks can be obtained which are not reduced in depth even by hot washing. Some work has been done on temperature control, but it is best to maintain a set temperature, e.g. that normally achieved in the dyehouse, and to control the speed of dyeing by varying the amount of sodium thiocyanate. It is convenient to provide the 10 yd. travel, allowed for dye penetration before squeezing, by "skying" the fabric after immersion, thereby avoiding the necessity for a large amount of dyeliquor.

After squeezing, the fabric is passed into a washing-off bath of cold water. This washing should be thorough and efficient, so as to remove all the alcohol present. After washing off, care should be taken in drying and the use of high temperatures avoided, as the fabric is still in a highly swollen state. In this state, if the tenter temperature is high, there is grave risk of the clips leaving a glazed mark.

The following dyes have been found to give very satisfactory results when applied in the manner just described—

Azo Rubinole 3GP (S.), Chrysophenine GS (I.C.I.), Brilliant Wool Blue GL (S.), Xylene Milling Blue 6G (S.), Polar Yellow 2G (Gy.), Xylene Fast Yellow 2GP (S.), Neolan Orange R (Ciba), Cloth Fast Orange G (C.A.C.) and Xylene Blue AS (S.).

The process described is very satisfactory for lining shades and furnishings and can be used equally well for light shades on satins and taffetas.

FORTISAN

Fortisan is the name of a new fiber made by British Celanese Ltd. which was used in large quantities during the war for making parachute fabrics. It is stretched yarn, and by this stretching a high degree of orientation of the micelles is achieved, resulting in a fiber having very high strength and also possessing a very fine filament denier. These strong yarns find application in the production of light fabrics in the dress and underwear ranges and are also of interest for linings and men's shirtings.

Naturally, the characteristics which made Fortisan so suitable for parachute fabrics and cords will not necessarily be required in the same degree when the fabrics are intended for dresses and underwear. There is no doubt that other fibers of different filament deniers, and with physical characteristics different from those given by the yarn used for parachute fabrics, will be used according to the type of fabric visualized.

Fortisan is a regenerated cellulose fiber and so is dyed with dyes suitable for cotton and viscose rayon. The filament denier of the fiber used for making parachute fabrics was 0.4, and it is with fabric made from such fibers that most of our trials have been made. This fine filament denier has an important bearing upon the apparent depth of shade which can be readily achieved and also on the processing.

Dye jiggers on which Fortisan fabrics are to be processed should have very light, easily running guide rollers and the tension warp-way should be so adjusted that slipping or skidding over these rollers does not take place. This precaution is necessary to prevent the fine filaments of the weft from being damaged or broken, which would lead to loss of weft strength.

It has not been found satisfactory to process these fine filament fabrics on the winch on account of the abrasion marks which are formed. These marks appear very similar to soap marks when viewed overhand, but they are not removable by re-treatment.

In order to improve the affinity for dyes, some swelling treatment may be given as a preliminary process, and solutions of caustic soda, caustic potash, calcium thiocyanate, etc., may all be used for this purpose, the strength and temperature being adjusted according to the degree of swelling required.

Whenever a fabric has been given such a swelling process to enhance the affinity for dyes, care should be taken during the subsequent drying operation. A low temperature and the absence of tension, both in warp and weft, is essential if a full soft finish is required.

The direct cotton dyes found most suitable and having most affinity for Fortisan are those which have been classified as having a low time of half-dyeing, e.g. Chlorazol Fast Orange GS (I.C.I.), Chlorazol Fast Scarlet 4BS (I.C.I.), Chlorazol Fast Red FS (I.C.I.), Chlorantine Fast Blue 4GL (C.A.C.), Chlorazol Brown MS (I.C.I.), and Chlorazol Black SD (I.C.I.), diazotized and coupled with *m*-toluylenediamine.

For full bright shades, azoic dyes give excellent results and may be applied in the usual manner, but with additional "naphthol" and base, compared with the normal recipe used for cotton or viscose rayon.

Many of the sulfur dyes also give excellent color value, particularly where olive-drab shades are required, and good use can be made of these dyes for dark shades, e.g. bottle-green is obtained with Sulphol Olive Yellow 3G (J.R.), Thional Navy Blue XXS (S.) and Thional Brilliant Green G (S.).

Vat dyes can also be applied by the usual processes.

PRINTING OF FORTISAN

The printing of Fortisan follows very closely the technique established for cotton.

Allowance has to be made for the lower affinity of Fortisan, which in printing is roughly about 50 per cent that of cotton, so all prepares and color mixings should be increased in approximately this proportion. Azoic, vat, chrome and basic dyes are the most suitable.

For azoic dyes, which give bright full shades, the "naphthols" are padded in the usual manner, about 4-6 per cent being required, with 8-10 per cent of the Fast Color Salt for subsequent coupling. Such prints should be soaped thoroughly, a solvent scour helping appreciably if there is any tendency to rubbing. Since this range is rather limited, vat dyes or chrome dyes are used to fill the gaps.

With vat dyes, any tested recipe has been found to be satisfactory. For a full-strength shade 30 per cent of a 10 per cent color paste is required, followed by steaming for 15 min. at 220°-225°F.

Chrome dyes are also satisfactory on Fortisan if standard cotton recipes are increased to the extent previously stated.

For bright shades basic dyes can be used, but they are not very satisfactory owing to their poor fastness to light and rubbing.

For washing off after the printing and steaming processes, the use of a winch is the best method, but very satisfactory results can be obtained using the open soaper. In order to facilitate finishing, the tension should be kept to a minimum if the open soaper machine is used.

Fortisan possesses many desirable features and can be very attractive as an underwear type of fabric.

The Influence of Advances in Other Industries on Textile Printing and Finishing*

R. J. HANNAY

INDUSTRIAL progress in the twentieth century, and particularly during the past twenty years, has brought home to most of us the increasing effect that change and development in different sections of industry have upon each other. Sections of industry which for years built up skill and tradition within their own boundaries, and depended very largely on men within their own ranks for new techniques and developments, are being profoundly influenced and changed by the advances in other sections. This effect, although not new, is increasingly greater as scientific knowledge and achievement advance, and in the textile and finishing industries it has been very noticeable for some years. For centuries we have been concerned with yarns and fabrics made from natural fibers,t and our proficiency and skill in dealing with them have gained us a world-wide reputation. Results and effects of great commercial value were obtained by the careful observation and experiments of skilled men within the industry, but the fundamental chemical and physical principles involved in producing these results were very imperfectly understood, if indeed they were recognized at all, and a wide field was left for further investigation. This field has been opened up in recent years and has given rise to many advances and new possibilities, most of which affect our own industry.

Consider the natural fibers, cotton, silk, and wool. Nature has provided us with fibers which are strong, stable, and not easily damaged in normal processing. Certain chemicals will decompose and destroy these fibers, but for ordinary purposes they may be regarded as chemically and physically inert, and bleaching, dyeing, and finishing processes were developed upon the assumption that little or no change took place in the actual fiber itself. Then came the discoveries by Chardonnet, Cross and Bevan, Emile Bronnert and the brothers Dreyfus, that cellulose was by no means as inert as had been supposed and the development of artificial yarns made from solutions of various derivatives of cellulose. Research into the physics and chemistry of these processes has led to the modern theory of the structure of textile fibers, viz. the theory of linear polymers, which in turn led to the building up of synthetic linear polymers and the production of modern synthetic yarns and fibers such as nylon. Today, there are many synthetic fibers, and few of the modern ones are the result of research in the textile trades. Many of them are developments of research into the nature of rubber and the desire to produce synthetic substitutes for this natural product, aided by knowledge resulting from fundamental research into the structure and nature of the natural fibers.

The effect on the finishing trades of the introduction of these new fibers into textile fabrics has been great. New bleaching, dyeing, printing, and finishing proc-

* Presented at meeting, Scottish Section Society of Dyers and Colourists, October 26, 1945. Reprinted from their Journal, June, 1946.

esses have had to be developed in order to prepare and decorate these fabrics for domestic use. The synthetic fibers and fabrics have drawn attention forcibly to features of processing which, in the past, have received very little attention, viz. the mechanical and physical effects of processing upon the final products. Cotton, for example, is a fiber which is not obviously affected by the normal tensions and temperatures found in finishing, and the processes developed aim at maximum production and cheapness for export markets, while giving good saleable results. Drying over steam-heated cylinders is still the most efficient and economical method of drying cloth, and no obvious detrimental effect is shown by cotton piece goods dried in such a manner. If certain types of piece goods made from some of the newer synthetic fibers were dried in this way, however, the characteristics of the fabrics would be completely changed and spoiled, and it can be shown that, even with fabrics which show no obvious deterioration, improved effects can be obtained by altering the methods of drying. What are the reasons for these changes? It is necessary to remember that all textile fibers are colloidal in nature and that hydration and dehydration of such substances bring about certain well-defined physical changes which are not always completely reversible. When an aqueous colloidal solution of a substance like boiled starch is evaporated carefully at a low temperature under reduced pressure, excess water is first removed, resulting in a gel which still contains a considerable amount of water. Further dehydration produces a soft pliable film which easily swells again into a gel on addition of water. Drying the gel at a high temperature, however, produces a hard, tough film which will only take up moisture again with difficulty, and the difference between these two films is very noticeable. Further, if the gel is of any considerable thickness and drying proceeds from the outer surfaces at a rate greater than that at which the moisture in the inside can diffuse to the surface, a tough film may be formed on the outside, thus impeding drying and leaving the inside still moist. Complete drying increases the hardness of the outer surface and distorts the film. Similar effects can take place in the drying of cloth. Drying takes place in two stages, viz. (1) removal of excess moisture from the interstices of the fabric and the surface of the fibers, and (2) drying out of the absorbed moisture from within the fibers and yarns. Water causes the fibers to swell and shrink in length. The temperature of the cloth in the first stage will not rise above 100°C., no matter how high the applied temperature may be, as there is always excess moisture on the fabric and, therefore, little harmful effect. When this stage is passed, however, if drying then proceeds too quickly or at too high a temperature, the outside of the yarn becomes baked and hardened before drying is complete, with consequent effect on the handle, the creasability, and the draping qualities of the fabric. A similar effect may be produced by prolonged overdrying. Not only are the properties of the finished cloth affected, but its receptive quality is diminished. This is particularly noticeable in printing. The hard, glazed nature of the fibers in an over-dried fabric will not receive the printing color properly and poor penetration, "mealiness," and poor color yield result.

New advances in the electrical industry are drawing attention to other methods of drying, e.g. infra-red radiation and "high frequency" or dielectric drying. These, at the moment, appear to be rather uneconomical and of low thermal efficiency as far as textile fabrics are concerned, but further improvements and developments may render them suitable for textile finishing. The present drying methods depend almost solely on conduction and convection of heat; heating and drying proceed from the outside of the threads and absorbed moisture has to make its way largely by capillary attraction from the center of the threads to the surface, thus promoting surface hardening and baking, particularly if drying is carried out too quickly or at too high a temperature. If some method of applying heat evenly throughout the body of the yarn or fabric could be devised, evaporation would be correspondingly uniform, thereby minimizing the risks of uneven drying inherent in the present systems. Infrared rays have the power of penetrating below the surface of bodies by which they are absorbed, and it is this property which makes them so attractive for use in drying. While infrared drying gives greatly increased speeds of drying without detrimental effect in many applications, as compared with convection drying, to the textile processor it presents a possibility of obtaining more even drying of all parts of the yarn or fabric. Although there are both economic and scientific objections to its general application at the present time, e.g. the different rates of absorption and reflection of the rays by variously colored and white fabrics, the textile processor cannot afford to ignore such developments in the electrical industry. The temperatures at which infra-red drying is most efficiently carried out at present suggest that this form of drying should be confined to the first stage of the process, in order to avoid the harmful effect of too high a temperature in the final drying out, i.e. a combination of drying methods may be better than any one single process. The desirability of even heat distribution is further emphasized in the drying of packages of yarn, e.g. spools and cops, and in the possibility of drying batches of cloth without unwinding them.

It is well-known that resistance to the passage of an electric current creates heat energy within the resisting body, and the application of this principle has led to the development of what is known as "high frequency" drying for certain processes. If a wet batch of yarn or cloth is placed between two electrodes and an electric current is passed through it, the resistance to the flow creates uniform heating which can be utilized to evaporate the moisture evenly from all parts of the batch. Unfortunately much electrical energy is required in this type of drying, and at present it appears to be quite uneconomic for general use, but again it is necessary not to lose sight of its possibilities.

Another important factor in the handling of textiles is tension, both in drying and generally in wet processing. An example of what happens is provided by the mercerizing of cotton. First, on impregnation, swelling and shrinkage in length of the fibers occur, owing to the action of the caustic soda on the cellulose, which becomes much more plastic. Tension is applied to prevent the shrinkage or to bring back the original length and width of the fabric. This causes rearrangement of the cellulose micelles—the arrangement having been disturbed by the action of the caustic soda—in a more orientated form giving increased luster and higher tensile strength, but a lower elasticity and elongation value, with the result that the fabric is more wiry and harsh in handle, creases more easily, and has altered dyeing properties. On the other hand, if no tension is applied and shrinkage is permitted, the increase in luster is much less, the fabric becomes fuller in handle, the resistance to creasing is greater and the increase in depth of shade on dyeing is greater. A similar series of effects takes place in drying under tension and without tension, respectively, although to a much smaller degree with cotton, but with many of the regenerated cellulose and synthetic fibers to about as marked a degree. In the past, many finishers have been made painfully aware of the glassy appearance, harsh handle and proneness to creasing caused by drying certain continuous filament viscose rayon fabrics under excessive tension, and the same effect is shown to a lesser degree by fabrics made from spun Fibro yarns. Better understanding of the physical reactions of the newer synthetic fibers has drawn attention to the effects of drying and handling upon the finished fabrics, and has shown that high thermal efficiency and speed in the removal of moisture from fabrics are by no means the only important factors in drying. Much has been done to increase the efficiency of alternative

methods of drying to that of cylinder drying, which still shows the greatest thermal efficiency. Improved methods of air heating and circulation, increased air speeds, and higher temperatures with increased control of humidity and temperature have been introduced in air drying, together with methods of handling goods without tension which have generally produced good results in finished fabrics.

The effect of tension on textile materials is shown in another very practical way in a number of the newer types of yarn now available. The search for high-strength yarns for use in tire manufacture and aircraft work has resulted in the production of highly stretched yarns such as Tenasco, Fortisan and Durafil, the dyeing properties of which differ considerably from those of the older types of rayon. Research into the theory of dyeing has led to the conception of the dye molecules entering and filling the intermicellar spaces in the cellulose fiber, as well as being affected by certain groupings in the cellulose chains. In the stretch-spinning process, the cellulose micelles tend to become highly orientated, thus becoming more closely packed and parallel in formation. One effect of this is to make the intermicellar spaces, and the special groupings in the cellulose chains, more difficult of access to dyes, thereby increasing the difficulty of dyeing as compared with similar types of yarn in an unstretched condition. The stretch-spinning process also tends to give a yarn with a more springy and wiry handle and one which is more difficult to wet out. It must be borne in mind that this stretching, although it exercises an important influence on the dyeing properties, is not the only factor. It is the custom in some types of manufacture to carry out the stretch-spinning with one form of cellulose and then to convert the stretched yarn into another form, e.g. the stretch-spinning may be done on cellulose acetate which is afterwards partially hydrolyzed to cellulose. This process naturally affects the dyeing properties of the finished yarn.

Research and development in the chemical industry to meet war needs have made available commercially many substances which previously were only laboratory reagents. Although possibly not developed primarily for textile purposes, such substances have found spheres of usefulness in textile finishing. Many of the synthetic resins and solvents produced for electrical insulation and for paints and dopes can be applied to textiles for a variety of purposes, e.g. for the production of waterproof and washproof, fire-and glow-resistant fabrics. At the present time the only satisfactory method of producing such fabrics is by impregnation with a metallic oxide or salt which imparts fire-resistant properties, followed by a coating of a chlorine-containing synthetic resin, e.g. polyvinyl chloride.

Again, the development of permanent finishes on textile materials has utilized the products of the plastics industry, including the many derivatives of cellulose now available. The application of such products has had a profound influence on finishing. Whereas previously only aqueous media were involved, the problems associated with the use of organic solvent media now have to be faced. These problems include the provision of plant with good ventilation, solvent recovery in some cases, the study of toxicity to human beings, precautions against the toxic effects of some solvents, and last, but by no means least, ease and cheapness of cleaning plant owing to the cost of these media. This last consideration has produced a great advance in emulsion technique. In order that water, the cheapest medium, may still be employed in these processes, emulsions of synthetic resins dispersed by means of water-soluble derivatives of cellulose, e.g. methyl cellulose, have been produced and applied to textile fabrics as special finishes, final fixation being obtained by a short baking process in some cases, similar to that given in the well-known crease-resist process.

The availability of these synthetic resins has revived interest in the pigment printing of textile materials. Resins are used as binding agents for the pigment, and prints fast to light and washing can be produced by this means. Perhaps the best known of these methods is illustrated by the development of the "Aridye" process in the United States. The main drawback to pigment prints on textile fabrics is their comparative looseness to rubbing, and much thought is being given to this matter. Research into the production of pigments with special physical characteristics, e.g. fineness of division and special dispersion properties, together with new methods of obtaining a good bond between the fixing medium and the textile fabric, in conjunction with better penetration of the fibers by the printing color, appear to be yielding much improved results in this direction, and it is likely that in the near future considerably improved products may be available.

The possibility of producing photographic prints on textile materials has intrigued printers for many years, and it is, of course, possible to do this for certain specialized purposes. Color photography, involving the reactions of certain groups of dyes with photographic chemicals, has renewed interest in this form of printing. The general principles are *(a)* the production of a silver image, *(b)* the modification of the silver image by toning and *(c)* the modification of the silver image by dyeing. Cloth is prepared by precipitating in it a light-sensitive silver chloride, either alone or in conjunction with other materials, e.g. β-naphthol, for aftertreatment with diazonium salts. The pattern is then produced by partial exposure to light, which is followed by developing and fixing. Aftertreatments with other metallic salts and dyes provide a range of colors. Particulars of such processes have been given by I. G. Farbenindustrie A.-G[1]., whilst the use of Indigosol dyes for toning photographic emulsions has been described by Jasper[2]. The use of diazonium salts in producing colored images has been described in articles in technical journals[3]. This method of decorating textile fabrics is still far from being of general application, but the textile technologist should keep in touch with such developments in order that he may be able to adapt and use them for his own purposes.

The urea process for printing acid dyes and direct dyes on viscose and cuprammonium rayons has brought its own problems, which are linked up with the improvement in fastness to water and washing of direct dyes on cellulose fibers. Various aftertreatments with agents such as Sapamine (C.A.C.), Fixanol (I.C.I.) and Solidogen (I.G.) have been suggested and used. The great drawback to these auxiliary products is their detrimental effect on the fastness to light of many of the dyes used. Work is still proceeding and it seems likely that new products will be developed which will be free from this drawback. Dyes containing metals, e.g. copper, are available and possess good fastness to light and washing. Products presumably based on copper derivatives of certain synthetic resins are in view, for the aftertreatment of direct dyes and acid dyes, and these developments in the dyestuffs industry may have a considerable effect on the dyeing and printing industries.

The production of fabrics made from glass fibers has created a demand for methods of coloring and printing them, the use of synthetic resins having been advocated for this purpose. The resins may be applied first, and after fixing may be colored by dyeing, or colored resins made from mixtures of resin and dye may be applied.

With the great increase of scientific knowledge which has taken place during the present century, it is becoming increasingly difficult for the technologist to keep in touch with developments outside his own particular sphere. Specialization is becoming increasingly necessary for efficient commercial exploitation of new techniques and discoveries, but too narrow an orbit is dangerous to the individual and to industry.

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[1] U. S. P. 1,945,658.
[2] U. S. P. 2,271,176.
[3] "Silk and Rayon," 1943, 17, No. 5, 296; Reynolds, "Text. World," 1945, 93, No. 4, 133.

Proceedings of the
American Association of Textile Chemists and Colorists

JULY 15, 1946

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STUDENT CHAPTERS

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North Carolina State College
Philadelphia Textile Institute
New Bedford Textile School

Members should notify the **Secretary** immediately of all address changes

One Hundred and Fifty-fourth Council Meeting

THE Council held its 154th meeting in the Hotel Commodore, New York, N. Y., on Friday morning, June 14, 1946. Present were Henry F. Herrmann, Vice President, presiding, and Hugh Christison, Vice President; William R. Moorhouse, Treasurer; Louis A. Olney, Chairman of the Research Committee; Carl Z. Draves and P. J. Wood, Past Presidents; Edward S. Chapin, George O. Linberg and Charles H. A. Schmitt representing Northern New England; Howard V. King representing Rhode Island; Patrick J. Kennedy and Leonard S. Little representing New York; Percival Theel and Charles A. Seibert representing Philadelphia; Samuel L. Hayes, Raphael E. Rupp and R. Hobart Souther representing Piedmont; Walter M. Scott representing Southeast; Kenneth H. Barnard, Chairman of the General Meeting Technical Program Committee; Winn W. Chase, Chairman of Publicity; Harold W. Stiegler, Research Director; and Harold C. Chapin, Secretary.

The Secretary's report of the 153rd Council meeting and financial report of June 7, and the Treasurer's report of June 12, were accepted. The Appropriations Committee reported on investments made since the last meeting; and recommended a fund of $1000 from which a local section might borrow toward financing of a General Meeting, subsequently making repayment. This the Council appropriated. The Committee was authorized to invest recent increments to the Olney Medal Fund, and to spend up to $3000 in purchase of any stocks on subscription rights, should such accrue to the Association on stocks it owns. Reporting for the committee appointed to consider convention problems, Mr. Barnard recommended a standing committee, for which the Council directed the Committee on Constitution and By-laws to prepare a suitable amendment to the By-laws. Resolutions were passed in memory of George A. Moran, recently deceased.

Mr. Chase reported for the Publicity Committee, Mr. Herrmann for the Corporate Membership Committee, Mr. Linberg on the Convention of 1946, Dr. Olney for Publications and on activities of the A.S.A. Ultimate Consumer Goods Committee, and Dr. Scott on the Inter-Society Color Council. Mr. Kennedy reported that all Sections would present papers in this year's Intersectional Contest. Mr. Little reported on the Inter-Society Council for Textile Research, and on coming meetings on shrinkage and on gas fading of dyed acetate rayon. He asked approval of a two year contract for research with the Chemical Warfare Service, on which Dr. Stiegler gave further details. The Council authorized the Executive Committee on Research to sign this and another contract with the Quartermaster Corps. It was voted that the next Council meeting be on Friday, Sept. 27, in New York.

Elected to Corporate membership were the Concordia-Gallia Corporation and the Lyman, S. C., Division of Pacific Mills. Each of the following was elected to the class of membership specified, as of thirty days from publication of application, provided no objection be received meanwhile by the Secretary.

SENIOR

C. F. Ackerbauer	C. C. Fagan	F. T. Lense, Jr.	P. Ruhl
J. M. Almand	B. F. Faris	M. W. Levi	J. B. Sanders
W. R. Adkins	G. E. Faulkenberry	G. J. Littlewood 3rd	R. A. Schetty
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M. E. Batt	L. Gerry	Q. G. McCombs	M. Stead
E. R. Beigbeder	I. Grossman	G. H. McCormick	E. Stowell
J. R. Bentert	A. Guffy	E. H. McCoy	C. Streck
N. M. Bigelow	E. Hahn	F. McGuire	S. Schandler
E. Bohm	P. V. Hartman	H. McTurk	J. W. Schenkel
W. R. Brandt, Jr.	R. G. Hallhagen	R. E. Miller	A. E. Shumote
C. J. Britt	G. Heine	L. H. Mitchell	C. A. Shuttleworth
R. C. Brown	K. G. Hennig	J. C. Moran	E. Simmat
B. V. Buonanno	R. E. Hoffman	B. R. Morgan	T. L. P. Spanley
J. Buter	J. P. Hollihan	A. C. L. Newsom	C. Spinner
D. Curtis	F. G. Hubener	C. H. Ochsner	J. M. Stevens
L. J. Carbonetti	J. W. Huber	E. B. Owren	C. F. Sugg
E. L. Clifford	E. G. Iverson	J. A. Parker	R. J. Summerill
R. H. Cushing	E. S. Johnson	A. M. Patel	S. J. Tanenhaus
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H. P. Danesi	H. M. Kaufman	W. C. Peurifoy, Jr.	C. C. Tillotson
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J. F. Dreyer	R. C. Kopp	T. Rakosi	R. W. Vennell
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H. Eisenstat	A. McLangereis	R. E. Rettew	G. Wiseman
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B. Factorow			

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B. A. Chestochowski	G. B. Lins	T. F. O'Brien, Jr.	F. S. Webster
S. B. Cupp			

SECRETARY'S FINANCIAL REPORT—JUNE 7, 1946

Received and transmitted to Treasurer	Applications	Dues, regular and reinstate.	Dues, Corporate and Sustaining	Miscellaneous	Totals
Aug. 1, 1945 to Mar. 29, 1946	2,360.00	17,303.87	37,965.00	7,333.47	64,962.34
Mar. 27 to June 7, 1946	957.50	515.00	675.00	2,960.35*	5,107.85
Total in fiscal year to date	3,317.50	17,818.87	38,640.00	10,293.82	70,070.19
Leaving deposited by Treasurer with Secretary					2,000.00

*Miscellaneous items,		
Dividends		75.00
Year books		389.78
Analytical Methods		6.00
Reporters		-196.85
Reprints		3.60
Launderometer royalties		145.00
Flammability testers		639.00
Color transfer charts		63.00
Water test apparatus		66.75
Gas fading units		40.00
Moth cloth		73.75
Dyed standards		42.00
Multifiber cloth		286.00
Crockmeters		350.20
Crock cloth		84.40
Olney Medal Fund		500.00
		2,961.33
Less bank charges		.98
		2,960.35

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W. H. Eastburn	J. J. Murray, Jr.		

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G. W. Dunham	E. H. Largen	M. T. Oliveira	N. I. Schneider
J. A. Flangan	R. G. Mansfield	R. T. Parham	A. B. Sutcliffe
H. W. Firsching	P. J. McKone		

Transferred from other classifications to Senior membership were R. C. Carr, F. G. Clark, V. W. Colby, M. P. Decker, Jr., R. Gow 3rd, J. R. Hill, and W. L. Parrott.

Respectfully submitted,
HAROLD C. CHAPIN,
Secretary

ANNUAL OUTING, MIDWEST SECTION

THE 14th Annual Outing of the Midwest Section of the A.A.T.C.C. was held at Lake Lawn, Delavan, Wisconsin on June 22nd, 1946 and was attended by 133 members and guests.

The outing committee was under the able chairmanship of Eric Camp and he was nobly assisted by L. B. McFarland, Gordon Stott and Archie Alexander.

A softball game was held in the morning between the Mill Men and Suppliers. The score was too awful to print, but in favor of the Mill Men.

Capt. Mill Men: Louis Blank.

Capt. Suppliers: Louis Hoehn.

A buffet luncheon was held in the dining room.

The golf tournament started at 1:00 P. M. Winners were as follows:

Low Gross—Bob Anderson.

Low Net—Dave Anderson.

Fadeometer Trophy won by — Fred Jones.

Low Net Class A won by — Gordon Stott.

Low Net Class B won by—John Noble.

Low Net Class C won by—J. A. Turner.

Low Net Class D won by—Al. Feit.

Low Gross Guests won by—Gordon Wolfier.

Low Net Guests won by—Roy Ziock.

The Peoria System of computing handicaps was used in determining scores.

Horseshoe Winners were:

Singles—Red Haney.

Most Ringers—Eric Hempel.

Doubles — First, Tony Klute, Frank Hempel.

Doubles—Second, Dr. C. S. Lowe, Harold Dingee.

The Ping Pong Tournament was won by G. Sowinski.

Dinner was served at 7:30 P. M. and was followed by the distribution of many beautiful prizes by Eric Camp. The party was a huge success.

Respectfully submitted,
George B. Chabot, Jr.,
Secretary.

EMPLOYMENT REGISTER

This column is open for four insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the Secretary of the Association, Lowell Textile Institute, Lowell, Mass. It is understood that these will be open to inspection by prospective employers, who can obtain further information through the code numbers from the Secretary.

46-5

Education: Lowell Textile School, Night, Chemistry, 1942.

Experience: Hosiery dyeing and finishing.

Age 29; married; references.

46-6

Education: Graduate, Lowell Textile Institute, B.T.C., 1942.

Experience: Recently Lieut., U.S.N.R., and Commanding Officer.

Age 27; single.

46-7

Education: Graduate, Bradford Durfee Textile School, 1933.

Experience: Five years as Textile Engineer, developing Non-woven fabrics.

Age 31; married; 3 dependents; references.

46-9

Education: Graduate, Philadelphia Textile Inst., Chem. & Dyc.

Experience: Inspector, Quartermaster Corps. Staff Sgt., U.S.A.A.F., Sta. Chief, Meteorology.

Age 24; married; references.

46-10

Education: B. S., Pratt Inst.

Experience: Leather finishing. U. S. Army Medical Corps, Pharmacist, C. W. S. Instructor. Lab. application work on textile chemical specialties. Development of colors in laboratory and pilot plant. Interested in tech. sales service.

Age 31; single.

46-11

Education: PhD. Chem. Engg., Geneva, Switzerland.

Experience: Chief Chemist of Textile Mills, silk and cotton.

Age 57; single; references.

One Hundred and Forty-Seventh Meeting of the Research Committee

THE 147th meeting of the Research Committee followed the Council meeting in New York on Friday afternoon, June 14, 1946. Present were Chairman Louis A. Olney presiding, K. H. Barnard, G. L. Baxter, J. R. Bonnar, H. D. Clayton, H. Christison, W. E. Coughlin, W. W. Chase, E. S. Chapin, M. A. Dahlen, J. N. Dalton, C. W. Dorn, E. Freedman, A. H. Grimshaw, F. J. Groten, W. A. Holst, N. A. Johnson, P. J. Kennedy, A. J. Kellner, D. P. Knowland, H. W. Leitch, L. S. Little, J. E. Lynn, G. O. Linberg, A. R. Macormac, J. E. Meili, A. D. Nute, C. A. Seibert, H. G. Scull, R. H. Souther, H. W. Stiegler, W. M. Scott, C. H. A. Schmitt, P. Theel, F. R. Tripp, H. E. Wilde, P. J. Wood, and H. C. Chapin, Secretary.

Mr. Little reported for the Executive Committee on Research, particularly on contracts involving research by the Association for the Chemical Warfare Service and Quartermaster Corps. Dr. Stiegler gave as much further information regarding these as conditions permitted, and outlined personnel requirements. He described further progress in development of the detergency machine, and observations on effects of fabric structure and previous moisture content upon wetting and water penetration tests. In work upon urine and perspiration tests his laboratory had found in many cases that bleeding of color in water alone exceeded the effects of the other reagents. Mr. Christison believed these tests should be given further consideration by a reorganized committee.

Speaking for the Society of the Plastics Industry, Mr. Groten outlined the many tests required for the large volume of new materials released by the end of active hostilities, and the desire of his Society to cooperate with our Association in their development. A letter from the Writing Paper Manufacturers Association described serious difficulties from new types of fiber and durable finishes in cotton going into rag pulp, and the need of methods of treatment or removal.

Mr. Dorn reported that rayon samples were now undergoing laundry tests for wash fastness, and that the flammability test was being incorporated into probable legislation. Reporting for the Committee on Fastness to Light, Mr. Seibert stated that the National Bureau of Standards would have Fadeometer calibration papers ready for distribution in a few months. Mr. Scull announced an intersociety meeting on gas fading of acetate rayon on June 24. He mentioned the accelerating effect of paradichlorbenzene on such fading.

Professor Theel reported that his committee was engaged in a complete revision of Analytical Methods, with particular consideration of special methods of analysis peculiar to the textile industry, and of customary tolerances in acceptance of chemicals. It was voted by the Research Committee that common methods of analysis and abbreviated procedures be retained, even though this would necessitate less frequent publication. Supplements would be published from time to time in the Reporter.

Mr. Knowland, reporting on Color Transfer, requested that new methods involving this come under review of his committee. He showed a new test fabric of cotton and acetate rayon with larger squares of the respective materials than in the multifiber cloth, and raised the question whether the Association should continue to supply such fabrics, or recommend other sources of supply. Mr. Kellner reported on Resistance to Insect Pests. Dr. Coughlin stated that the new committees on dimensional change in fabrics would be organized according to methods of treatment, whether commercial laundering, home laundering or dry cleaning, rather than by nature of fabric. Mr. Linberg read a report from Martin H. Gurley Jr., on organization of the Committee on Durable Finishes.

Respectfully submitted,

HAROLD C. CHAPIN,
Secretary

CALENDAR OF COMING EVENTS

SOUTH CENTRAL SECTION:
Meeting (Tentative): September 21
(Patton Hotel, Chattanooga, Tenn.)

SUB-COMMITTEES
Meetings: September 26
(Hotel Commodore, New York City)

COUNCIL:
Meeting: September 27
(Hotel Commodore, New York City)

RESEARCH COMMITTEE:
Meeting: September 27
(Hotel Commodore, New York City)

NEW YORK SECTION:
Meetings: October 11, November 22
(Downtown Athletic Club, New York City)

NATIONAL CONVENTION:
Silver Jubilee Convention: December 12, 13 and 14.
(Hotel Statler, Boston, Mass.)

Secretaries of
Local Sections:

Please send 1946-1947 meeting dates as soon as possible to

AMERICAN DYESTUFF REPORTER

SILVER JUBILEE RESERVATIONS

PLANS for the Silver Jubilee Convention in Boston are progressing under the leadership of George O. Linberg, General Chairman. About September 1st, each member of our Association will receive a card on which he can specify the type of hotel accommodation desired. All requests for hotel reservations are to be handled by the Housing Bureau, 80 Federal Street, Boston, Mass. Reservations will be acknowledged from this office and assigned to various hotels which will, in turn, give a direct confirmation on each reservation. We would suggest that members do not contact the hotels directly on room reservations. The Committee feels that ample hotel space will be available.

OBITUARY

GEORGE A. MORAN

GEORGE A. MORAN, who retired as a chemist with the Calco Chemical Division of the American Cyanamid Co. on May 1, 1945, died at his home in Somerville, N. J. on June 4th. He was 71 years of age.

George A. Moran

Mr. Moran was born in Framingham, Mass. and received his preliminary education in the public schools of that town. He graduated from the Massachusetts Institute of Technology in 1897. Following graduation he entered the employ of the Dunnell Print Works in Pawtucket, R. I., where he worked under Dr. Emil Furneaux, who later became head of the research department of the Calico Printers' combine in England. Two years later he accepted a position with the Pacific Mills.

During the first ten years at Pacific he was occupied largely with research work on various textile problems. In 1909, when Pacific took over the Cocheco Manufacturing Company at Dover, N. H., he assumed charge of the chemical department of that branch and remained there four years, until the new print works in South Lawrence combined the two old plants, whereupon he returned to Lawrence. In March, 1916, Mr. Moran became chief chemist for the Pacific Mills, which position he held until March 1, 1933, when he joined Calco as a chemist in the Application Laboratory.

Mr. Moran was a charter member of the American Association of Textile Chemists and Colorists and was active in its organization. He served it faithfully for twenty-five years, being a member of its research committee, chairman of various sub-committees, and member at various times of the Council. He was also a member of the American Chemical Society.

He is survived by his widow, three sons, and one grand child.

* * *

At the meeting of the Council of the American Association of Textile Chemists and Colorists, held on June 14th, the following resolution was passed:

WHEREAS,

A Charter Member of this Association

GEORGE A. MORAN

has passed to his eternal rest, and

WHEREAS,

During almost a quarter of a century of his long and useful life, he has commanded our respect for his ability as a scientist and earned our admiration for his consistent faithfulness as a member of the Association, and

WHEREAS,

The memory of his modesty, friendliness, perseverance, reliability and tireless energy will long serve as an inspiration to his hosts of friends and associates, therefore,

BE IT RESOLVED,

That this resolution be sent to the family of our friend, tendering therewith our sincere condolences in our mutual loss, and,

BE IT FURTHER RESOLVED,

That a copy of this resolution be spread in full on the minutes of this regular meeting of the Council of the American Association of Textile Chemists and Colorists this 14th day of June, 1946.

• LEAVES OF ABSENCE FOR MONSANTO MEN

Monsanto Chemical Company has named four industrial scientists who will be awarded leaves of absence at full salary for an academic year of study at universities of their choice.

Announcement of the award inaugurated a program, a new move in American industry, to enable scientists to renew their studies and to establish close cooperation between industry and the university laboratory.

Named to receive the awards were Louis P. Wenzell, Jr., of St. Louis, Mo.; Colver P. Dyer of Winchester, Mass.; Carlyle John Stehman of Dayton, O., and Eli Perry of Springfield, Mass.

• GERMAN DYEING AND FINISHING

German dyers and textile finishers in many cases ignored even simple control measures, although their methods involved complicated techniques and ingenious mechanical devices, according to C. Norris Rabold, investigator for the Joint Intelligence Objectives Agency. His 173-page report on dyeing and finishing methods in Germany is now on sale by the Office of the Publication Board, Department of Commerce.

Except on some drying machines, the investigator noted no temperature regulators or thermometers in the plants he visited. In general, according to Mr. Rabold, German dyeing and finishing plants are poorly laid out by American standards. German machinery is heavier than American equipment and requires more power to operate; also, the Germans use two to three times as much labor to tend machinery as is customary in the United States.

This report supplements earlier OPB reports on German textiles and dyestuffs. It gives detailed descriptions of German dyeing methods, including pigment dyeing, sulfurs, acetate colors, and naphthol, anthrasol, and vat dyeing. The report is based largely on visits to I. G. Farbenindustrie plants and describes several of them in detail, including their formulas and processing methods.

Orders for the report (PB-16680; photostat, $12; microfilm, $2) should be addressed to the Office of the Publication Board, Department of Commerce, Washington 25, D. C., and should be accompanied by check or money order, payable to the Treasurer of the United States.

• NEW PIGMENT PLANT

The Universal Pigment & Chemical Corporation, organized shortly before January 1, 1946, has just completed one of the most modern dry color plants in the country, with complete up-to-date production facilities, and with research and control laboratories for the solution of color problems.

It is planned to manufacture a complete line of organic lakes and toners for use in the paint, printing ink, linoleum, artificial leather, cosmetic, plastics and allied industries.

Emphasis is being placed on high standards of product uniformity through the application of the finest technological production and control methods.

Harold E. Weisberg, founder and president of the company, was for a number of years a research chemist with Ansbacher-Siegle Corporation, and later Director of Research of the Chemical Color Division of Reichhold Chemicals, Inc., where he developed many improvements in processing and in product quality.

Assisting Mr. Weisberg is Martin Miller, who also spent several years with the

above companies, and will now serve as Mr. Weisberg's chief technical assistant.

● DISTRICT SALES MANAGER, C & CCC

Robert L. Duncan has been appointed Albany District Sales Manager for Carbide and Carbon Chemicals Corporation, a Unit of Union Carbide and Carbon Corporation. He will be in charge of the Corporation's new Albany office located at 50 State Street. Until recently Mr. Duncan was a Lt. Colonel with the United States Army and saw service in North Africa, the Philippines and Okinawa.

● ADDITIONAL GERMAN REPORTS

Rigid wartime cloth conservation measures permitted German textile finishers to bleach fibers other than wool only in accordance with precise specifications, according to a report released by the Office of the Publication Board, Department of Commerce. None of the Allied nations attempted such detailed regulations.

This 222-page report was made by technical investigators for the Office of the Quartermaster General, U. S. Army.

Formulas and methods for bleaching cotton, rayon, ramie, and various fabric mixtures, considered by the Germans to minimize damage to fibers, are described in the report.

A comprehensive description of German textile finishing processes also is contained in the report. Special sections deal with German camouflage fabrics, the German army shelter half, engraving methods for printing fabrics, softening agents, swell-proof finishes, and preserving agents.

This report (PB-22337; photostat, $15, microfilm, $2.50) may be ordered from the Office of the Publication Board, Department of Commerce, Washington 25, D. C.

Two other reports, also made for the Office of the Quartermaster General and dealing with special phases of the German textile industry, were released.

● SURFAX "S"

A new product in the Surfax line of wetting agents has been anounced by E. F. Houghton & Co., 303 W. Lehigh Avenue, Philadelphia. Surfax "S" is a one-piece product which serves as a combined softener and Sanforizing agent for many applications. It is a combination of saponifiable and unsaponifiable oils soluble in all proportions in water and has been found particularly applicable for the finishing of heavy cotton fabrics, such as denims or coverts where an oil softener to produce proper feel and finish, plus a rewetting agent, have been used. It is also being found useful in the finishing of knitted fabrics, such as underwear cloth, which requires a soft feel and, at the same time, must be absorbent. Surfax "S" may be used in any bath having a pH above 7 and is compatible with the ordinary materials used in finishing. It is non-oxidizing; fabrics treated with it will not discolor nor develop disagreeable odor when stored.

● BOOKLET ON ANHYDRIDES

A new booklet, "Anhydrides," has just been published by Carbide and Carbon Chemicals Corporation, a Unit of Union Carbide and Carbon Corporation. This booklet discusses in detail the properties and uses of acetic anhydride, propionic anhydride, butyric anhydride, and maleic anhydride. It also presents charts with valuable data on the vapor pressures, specific gravities, viscosities, and other physical and chemical properties of these compounds.

Anhydrides are strong esterifying agents and are important raw materials in the manufacture of synthetic textile fibers, plastics, plasticizers, dyestuffs, and pharmaceuticals such as aspirin, vitamins, and sulfa drugs.

Copies of the booklet on "Anhydrides" (Form 5280) are available from Carbide and Carbon Chemicals Corporation, 30 East 42nd Street, New York 17, N. Y.

● DEXOLENE

Dexolene, a new product recently announced by the Textile Chemical Division of the Dexter Chemical Corp. of New York City, is used for dyeing, fulling, scouring, and carbonizing. This wetting-out agent is said to speed production and markedly improves the handle of the finished goods.

Dexolene is a sodium salt of an alkyl naphthalene sulfonic acid. It is furnished in liquid form, and is readily soluble in water at all concentrations.

Dexolene is said to be particularly useful in acid conditions which are encountered in wool processing. In woolen mills, Dexolene is recommended in the following operations: carbonizing, dyeing, fulling, and bleaching. The most important application is carbonizing.

● MEETING AND OUTING, S.O.C.M.A.

The regular monthly meeting and annual outing of the Synthetic Organic Chemical Manufacturers Association of the U. S. were held on June 12th and 13th at the Seaview Country Club, Absecon, N. J. The business meeting was held in the afternoon of the 12th and the dinner of the association was held that evening with President Ralph E. Dorland presiding as toastmaster. Entertainment was provided under the direction of the Chairman in charge of arrangements, M. Lemmermeyer. The annual golf tournament was held on the 13th with forty-two players participating. The following were prize-winners: *First Low Gross:* Neil B. Conley; *Second Low Gross:* Fred A. Koch; *Kickers' Handicap:* Harold W. Dingee, Bert R. Neice, Harold L. Simons and W. S. Weeks; *Lowest Number of Putts:* J. H. R. Stephenson; *Best Approach, Seventeenth Hole:* Fred W. Wolff; *Longest Drive off 18th Tee:* John H. Karrh.

● du PONT TRANSFERS

The Organic Chemicals Department of E. I. du Pont de Nemours & Company announces the transfer of Samuel A. Pettus and J. Raymond Nehmans to the promotion staff of the Textile Service Section, 40 Worth Street, New York. Their new duties will concern the promotion of "Zelan" durable repellent and "Aridex" water repellent finishes, as well as other products of the Fine Chemicals and Dyestuffs Divisions of the Company.

Samuel A. Pettus

Mr. Pettus recently returned to the Du Pont Company after serving as a captain in the United States Army. He was formerly a member of the Organic Chemicals Sales Department in Charlotte, N. C.

J. Raymond Nehmans

Mr. Nehmans formerly was connected with the laboratory of the Organic Chemicals Sales Department in New York.

• NEW ENGLAND TEXTILE FOUNDATION SCHOLARSHIPS

The New England Textile Foundation, founded primarily to train future executives for the New England textile industry and supported by Textile Mills in New England, announced that it has just awarded nineteen $500.00 scholarships to students who will enter Lowell Textile Institute this coming fall. The $500.00 awarded to each student will be sufficient to pay tuition and part of living expenses for the first year. Holders of N. E. T. F. Scholarships who have made a good record at the end of their freshman year, will be eligible for other scholarships which are available in succeeding years.

The scholarship awards were made on a strictly competitive basis. The winners were selected from a group of seniors in high school or preparatory school, or graduates thereof under 25 years of age, who were recommended by the principals of their schools and who took the Scholastic Aptitude Test administered at College Entrance Examination Board centers throughout the country on April 6, 1946. Both their examination marks and past scholastic records were considered in arriving at the final scores. An additional requirement for students entering Lowell Textile Institute is that they must have earned a certain number of "points" in algebra, geometry, physics, and chemistry. Graduates of this institution are given a Bachelor of Science degree.

New England Textile Foundation also states that additional scholarship awards, to students who will enter the Textile School of Rhode Island School of Design this coming fall, will be announced in the near future, and that another scholarship contest for 1947-1948 will be held in April of 1947. Students wishing to compete should communicate with the Foundation, whose address is P. O. Box 1466, Providence, Rhode Island.

• ANTI-FUME DE PASTE

Faster colors on acetate rayon fabrics are said to be made possible through development by Du Pont of Anti-Fume DE Paste, a new atmospheric gas-fading inhibitor.

Certain dyes which previously faded when exposed to atmospheric gas fumes are said to be given better fastness by the use of small quantities of this chemical material.

Anti-Fume DE Paste is substantively absorbed by the fabric, and its protective effects is said to persist after repeated washings and dry cleanings. It may be used with numerous popular shades on acetate rayon.

This product is applied during the dyeing operation, and requires no additional equipment. Commercial quantities of the new material are being made as rapidly as possible at Du Pont's Chambers Works, Deepwater Point, N. J.

Dr. George H. Colman, who has been appointed dean of the Institute of Textile Technology, Charlottesville, Virginia. Dr. Coleman is the first dean of the Institute and his arrival signalizes the inauguration of a program of graduate studies in the field of textiles, which was envisioned as one of the basic concepts in the founding of the Institute.

Dr. Coleman comes to the Institute from the University of Iowa where he has been since 1921, as an instructor, associate, assistant professor, associate professor, and professor. He received his A.B. in 1916 from Greenville (Ill.) College; his M.S. in 1919 and his Ph.D. in 1921 at the University of Illinois. He is the author of numerous scientific publications and has had a great deal of interest in the direction of graduate work in chemistry.

• HOUGHTON APPOINTMENTS

Announcement of two new appointments is made by Dr. R. H. Patch, Vice-President in Charge of Operations, E. F. Houghton & Co., manufacturers of industrial oils, chemicals and leathers, 303 W. Lehigh Ave., Philadelphia.

Dr. James T. Eaton, formerly Research Assistant to the Vice-President, has been made Manager of Research, in charge of the company's laboratories and product development. Henry H. High, formerly Superintendent of Laboratories, has been named Superintendent of the Philadelphia Oil Department, in place of D. M. Harvey, resigned.

• NEW RESIN EMULSION

A new resin emulsion, designed for use in the plasticizing of Buna N films and the polyvinyl chloride latices, such as the Geon latex series used in the treatment of fibers and in the coating of fabrics and paper, is announced by Resinous Products & Chemical Company of Philadelphia. Known as Emulsion G-25, this aqueous dispersion of Paraplex G-25 is said to be characterized by non-migration, permanence, resistance to heat and hot oil, and by flexibility at low temperatures. Combinations of the emulsion can be pigmented to give coated fabrics a variety of colors, with ease of application and absence of flammable or expensive solvents greatly widening its application in the plasticizing field.

In pigmenting coated fabrics, best results are obtained by preparing a paste of the pigment in water using Triton R-100, a dispersing agent produced by an associate, Rohm & Haas Company. The dispersed pigment then can be compounded readily with the emulsion mixture.

• LANASET TREATED WOOL

Substantial quantities of washable woolen garments will be presented in the fall market, according to Princeton Knitting Mills. The Lanaset resin process is being used to treat thousands of yards weekly of tabular knit all-wool jersey, and while it is not possible to supply more than a fraction of the orders that are being received, the total quantity produced for the market means that from August on there will be national distribution of Lanaset treated garments.

While this is the first large scale market offering of woolen garments treated for shrinkage control, it is not by any means experimental. Last fall, about a dozen different types of garments treated with American Cyanamid's Lanaset resin were marketed in limited quantities with signal success. In most cases the garments sold out within one day.

The short supply of textile equipment since the war has made it difficult for mills to get into large scale production. However, Princeton Mills, internationally known for its equipment installations, has provided the most modern in-line production facilities for Lanaset treatment, and is currently adding to these in an attempt to meet the wide demand.

• FLYING VISIT TO EUROPE

Frank Greenwall, President of National Starch Products Inc. has recently returned from a flying visit via Pan American World Airways to its English and Dutch Factories.

He reports that both factories are fortunately undamaged and in full production. Both countries are making great sacrifices and are working industriously to stabilize their economies.

The Company's Dutch plant processes potatoes into starch products, principally for export. A satisfactory crop is reported for this year so that he believes

the export restrictions will be liberalized.

In England, Mr. Greenwall conferred with Mr. Roberts, of the Food Ministry and other officials regarding the world starch shortage.

Back in New York, only nine days after his departure, he went on to Washington, D. C., to testify before the Small Business Committee of the Senate on the serious consequences of the corn situation.

● HERCULES BOOKLET

A new booklet listing Hercules chemicals and industrial explosives, and more than fifty industries which utilize these products, is now available from Hercules Powder Company.

In a manner designed for easy reference, the products are first indexed according to various industries in which the chemicals and explosives are used and then according to chemical families.

An indication of many applications for Hercules chemicals in plastics, paints, textiles, film, adhesives, paper, rubber, and insecticides is given in the new booklet.

Chemicals discussed in the booklet include the cellulose family, rosin family, synthetic resins, terpene solvents and chemicals, chlorinated products, explosives, blasting supplies and sporting powders, and special products.

● A.S.A. YEAR BOOK

The American Standards Association has announced publication of its 1945-46 Year Book. This is the first Year Book published by the Association since 1938. It, therefore, contains much new material of value to engineers, executives, and technical students.

The Book gives information about officers and members of the Board of Directors, of the Standards Council, and other policy forming committees of the American Standards Association. It also carries such basic documents as the Constitution and By-Laws of the ASA; and much information about the set-up of the organization and how standards are developed.

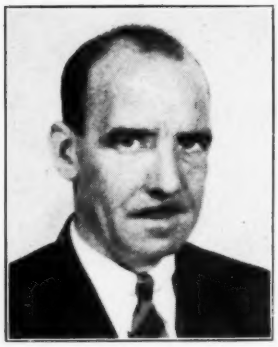
The center section of the Book is devoted to a listing of approved American Standards and projects under development together with the scopes of these projects and names of officers and members of active technical committees.

Those interested may obtain copies of the Year Book free of charge by writing to the American Standards Association at 70 East 45th Street, New York 17, N. Y.

● CANADIAN ANILINE BUILDING

W. P. Gudgeon, President of the Canadian Aniline & Extract Company, Limited, Hamilton, Ontorio, announces building has commenced on a new $125,000 unit constructed especially for the Kloranol, Viscanol, and Cannaterge powder series.

It is stated that this expansion which will allow for double the present floor space, is necessitated by the heavy demand for Canadian Aniline & Extract products in the foreign market. It is expected the new addition should be completed and in operation within two or three months.



Phil Moran, plant manager for the Hudson Piece Dye Works, Paterson, N. J., who left by Clipper on June 25 for an extended inspection tour of England's textile districts. This trip will renew many acquaintances for Mr. Morgan, having been born in Manchester, England. He has been with Hudson for the past eight years and prior to that was associated with Bradford Dyeing Association.

● FIFTH MERCERIZATION BOOKLET

The Textile Chemical Division of the Dexter Chemical Corporation has issued the fifth and last booklet in a series of reprints on the mercerization process. The booklet, "Luster Determination with a Photoelectric Photometer," prepared by Henry Ransom and Sidney M. Edelstein, explains in detail the steps to be followed in determining the luster of mercerized material including a description of the apparatus for measuring light reflectance and its arrangement. Copies are available by writing to Dexter Chemical Corporation, 819 Edgewater Road, New York 59, N. Y.

● PARTIAL REORGANIZATION, CHEMICAL DEPT., du PONT

A partial reorganization of the research and administrative activities of the Chemical Department of E. I. du Pont de Nemours & Company has been announced. The changes affect the laboratories at the Experimental Station, near Wilmington, where research activities of the Chemical Department and several other departments of the company are carried out.

Dr. A. P. Tanberg has been appointed administrative director, and Dr. M. M. Brubaker, laboratory director, both reporting to Dr. Cole Coolidge, assistant director of the Chemical Department.

Dr. P. L. Salzberg has been made general assistant laboratory director, reporting to Dr. Brubaker, and Dr. D. M. McQueen, an assistant laboratory director, reporting to Dr. Salzberg.

J. A. Grady has been appointed plant manager, reporting to Dr. Tanberg.

Dr. H. W. Gray has been appointed research supervisor, reporting to Dr. Paul R. Austin.

● PATENT FILES

Alien Property Custodian James E. Markham recently announced that complete files of patents seized from German and Japanese nationals are now available in the patent departments of the Chicago and Boston Public Libraries and at the APC's San Francisco office.

The files are located in the main building of the libraries, he said, and are arranged according to Patent Office classification to facilitate searching.

The APC patent libraries were transferred to the public institutions as a result of the closing of APC patent division field offices in those two cities, Mr. Markham explained. The APC patent library located in the Los Angeles Public Library has also been closed, he said.

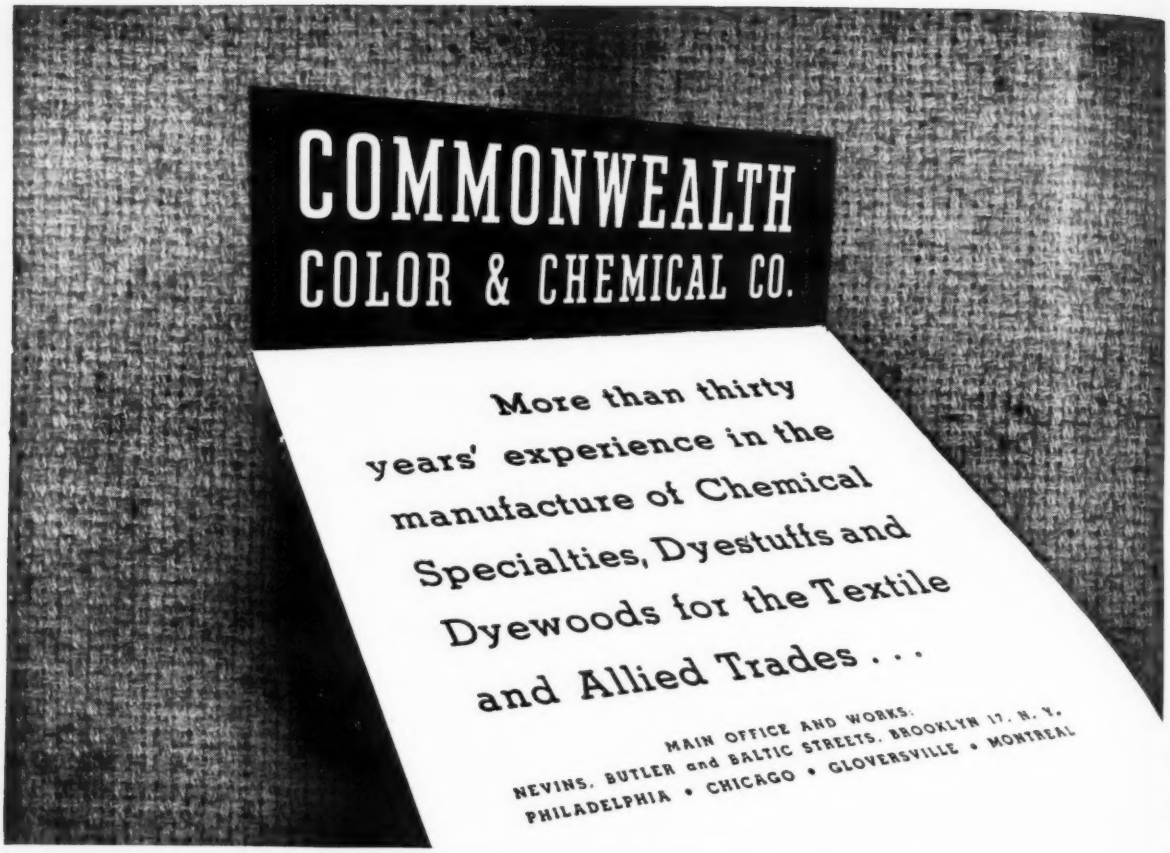
Patent libraries are maintained by the APC at its Washington office in the National Press Building, its New York office at 120 Broadway, and now at its San Francisco office at 417 Montgomery Street.

Abstracts of the patents seized by the APC are still available and may now be obtained from the Office of Alien Property Custodian, National Press Building, Washington 25, D. C., instead of from the APC's Chicago office. The abstracts, covering 8,000 chemical patents, are available for $25.00 and abstracts of 37,000 mechanical and electrical patents are available at the same price. The chemical abstracts have been prepared in 34 volumes available at a dollar each while abstracts of mechanical and electrical patents are available in each of over 300 Patent Office classifications at prices ranging from ten cents to one dollar.

● SOFTEX A.P.

A new cationic softener manufactured by E. F. Hougton & Co., 303 W. Lehigh Avenue, Philadelphia, and having a wide range of application is Softex A.P. This product is a soft jelly-like paste soluble in all proportions in water and having a pH working range of 3 to 8. It has been found particularly applicable in solutions containing acid and neutral salts where ordinary softeners cannot be used. Full information will be furnished on request.

For That
ONE-TWO
Sales Punch
Good Fabrics Plus
Good Color with
Calco Dyes
Consult our technical staff
on your dye problems
CALCO CHEMICAL DIVISION
AMERICAN CYANAMID COMPANY
Bound Brook, New Jersey
Calco
New York • Chicago • Philadelphia
Boston • Charlotte • Providence


COMMONWEALTH
COLOR & CHEMICAL CO.
More than thirty years' experience in the manufacture of Chemical Specialties, Dyestuffs and Dyewoods for the Textile and Allied Trades . . .
MAIN OFFICE AND WORKS:
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for de-sizing cottons, rayons and mixed goods

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Assures rapid, dependable de-sizing.

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Our technical staff always at your service.

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QUALITY RICHMOND PRODUCTS

Something Really NEW for WOOL and WORSTED

Scours either neutral or acid
Contains NO Soap
Does not break in hard water

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SCOURCLEAN X

The newest idea for WOOL and WORSTED

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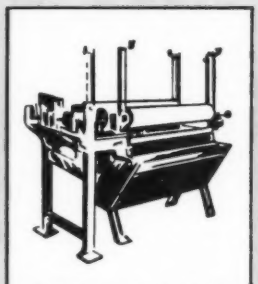
Trade Mark Reg. Patented

A WATER SOLUBLE RESIN BINDER

100% COLD WATER SOLUBLE



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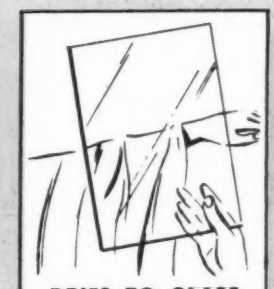
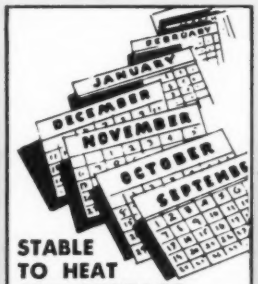
No special equipment. No curing.

CLEAN WORKING
Will not cause sticky or gummy deposits on equipment.

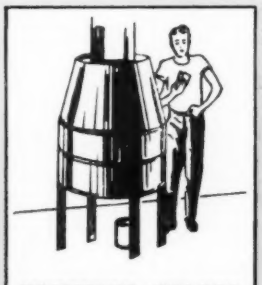


DRIES TO GLASS CLEAR FILM
Insures brilliant colors.

EFFICIENT BINDER
Reduces fly and shedding.



STABLE TO HEAT AND STORAGE
Will not develop discoloration or odor.



PRESERVES COLORS
Will not dull them or accelerate fading.

MORE ECONOMICAL
than older types of binders.

AHCOBOND S was developed to fill the need for a stable, water soluble resin binder, free from organic solvent, for use with starches, gums, fillers and softeners in warp sizing, back filling and similar operations. Its water solubility and stability make for greatest ease in handling; yet it gives maximum binding action and adds flexibility and toughness to starch finishes.

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NYASIL

Nyasil used in the trough, makes nylon yarn more pliable. Needles and sinkerheads do not become clogged or sticky, breakage is prevented and production is uninterrupted. Nyasil causes no trouble in the dye bath since it contains no contaminating impurities. Nyasil is a pre-war *proved* product—proved by performance in the total production of nylon hosiery in many of the nation's leading mills. Nyasil is economical since a pint is sufficient in 30 gallons of water.

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TO YOUR TEXTILE PROCESSING PROBLEMS

Soaps or synthetic cleaning agents? Which will be better suited to the type of materials you handle and to your particular operating conditions? Your own experience can best answer this question.

But whatever your preference may be, you'll get top performance from either Olate or Orvus in your wet finishing operations. And there's a good chance you'll find that both can be helpful in your mill.

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A pure, neutral, low titer flake soap with a reputation of many years' standing as an efficient scouring and fulling agent.

Fast dissolving, fast rinsing.

Fluid solutions—wet out fibers quickly, evenly, thoroughly.

Excellent emulsifying and lubricating properties.

Gentle cleansing action.

Provides excellent protection against uneven shrinkage and non-uniform fulling . . . against harshness or stickiness.

Retains its efficiency at lower-than-average temperatures.

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A gardinol-type product (sulfated fatty alcohol).

Fast, thorough wetting, emulsifying and scouring action.

Effective even in hard water. Helps guard against scum, streaks, specks and spots from hard water deposits.

Effective in presence of acids and alkalis.

Safe to fiber, fabric and color. Excellent results in scouring fugitive colors.

Promotes more uniform and thorough dyeing.

Helps prevent undesirable odor and yellowing of goods in storage.

O

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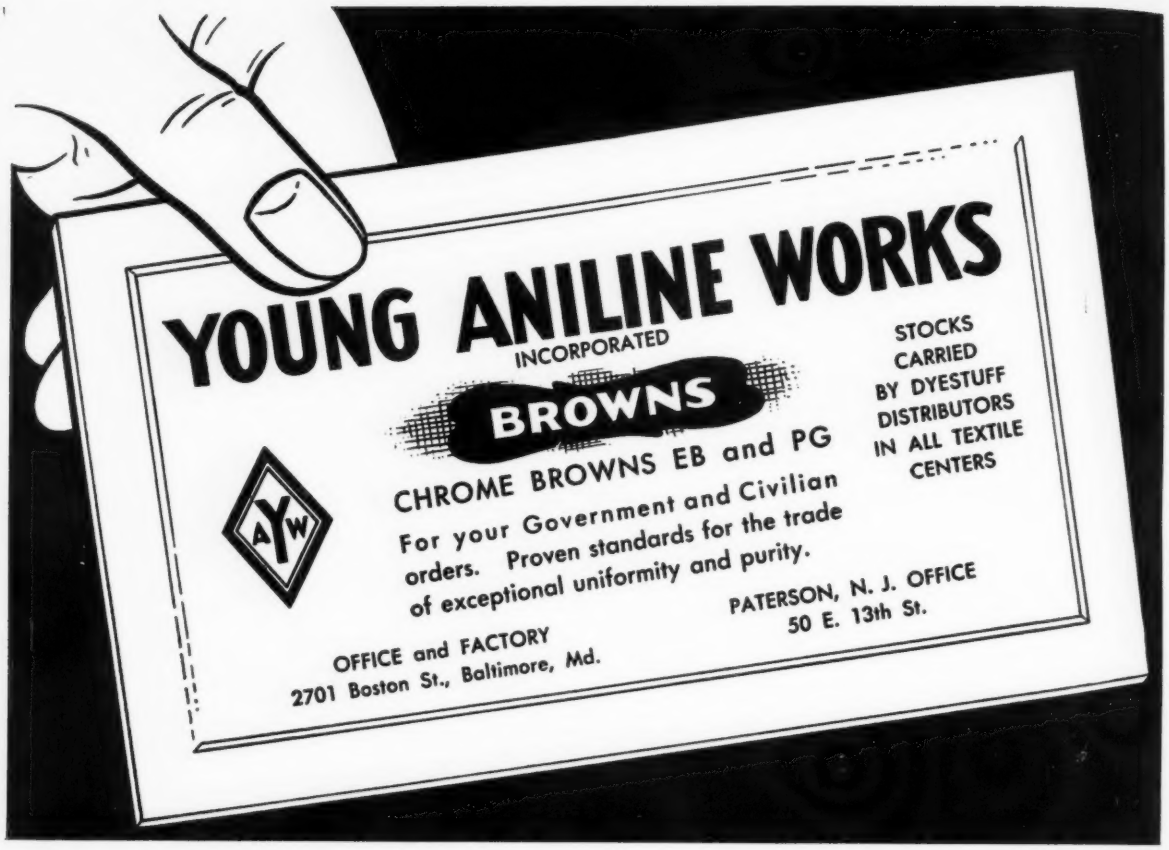
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For your Government and Civilian orders. Proven standards for the trade of exceptional uniformity and purity.
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Less Handling with

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Eliminates 3 to 5 Handlings

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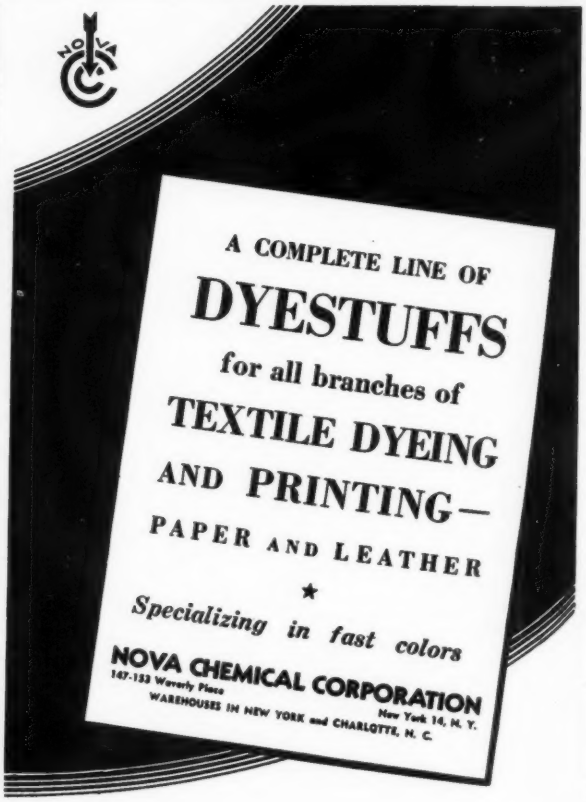

Self-emulsifying
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Easy scouring
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Non-staining
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Non-oxidizing
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Non-corrosive
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Completely stable
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Contains no fatty substances
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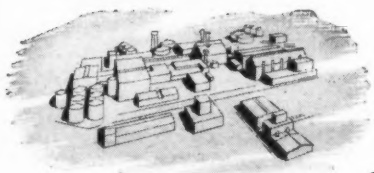
Excellent for knitting yarns, for dry finished fabrics.

A mill-tested product for oiling worsted stock

TO provide adequate lubrication in the spinning and weaving of worsted yarns and fabrics, use Twitchell Worsted Oil MC. A self-emulsifying oil which can be applied either before or in final gilling, Twitchell Oil MC properly conditions worsted fibres, provides antistatic properties, and assists in producing high tensile strength yarns with minimum breakage. This oil has no gum-forming tendencies, and will not corrode gill fallers or other metal parts in subsequent operations.

It is recommended for white and pastels, for dry-finished knitted fabrics . . . an economical product for efficient operation.



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Metropolitan Tower, New York 10, N.Y.

Since announcing the Silver Jubilee Issue of AMERICAN DYESTUFF REPORTER, to be published December 2, 1946, we have received many telephone calls and letters requesting additional information. The questions asked and the answers given were:

Question: Will this issue take the place of your Annual Processing Review Number?

Answer : Yes, it will. However, the list of new dyestuffs and chemical specialties developed during 1946 will appear in our issue of December 16--the issue following the Silver Jubilee Issue.

Question: Can we use regular product advertisements in the Silver Jubilee Issue?

Answer : Yes, we shall accept regular advertising pages; but because this issue is to be a permanent record of individual contribution to chemical achievement, we recommend the preparation of copy that presents factual, historical information.

Question: If we take four or more pages in which to present a complete history of our organization, can you help in the preparation of the article and the typographical arrangement of our pages?

Answer : Yes, we can help where necessary, as we have engaged a competent writer--familiar with this kind of work--whose services will be available.

Question: Will there be an increase in the cost of advertising pages?

Answer : No, there will not be an increase. Your regular rate will apply.

We undoubtedly shall be called upon to answer other questions as they arise; therefore, we suggest you watch for further announcements in the REPORTER.

Very truly yours,

M. D. Reeser

M. D. Reeser
Advertising Manager

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for manufacturers and jobbers

synthetic detergents

textile specialties

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For Rewetting In
SANFORIZING
AQUAKAL 74

is quick and effective

Also a fast wetting agent and penetrant for dyeing packages, piece goods, skeins and raw stock.

Or wherever fast, even wetting and penetration are necessary.

Kali
MANUFACTURING CO.
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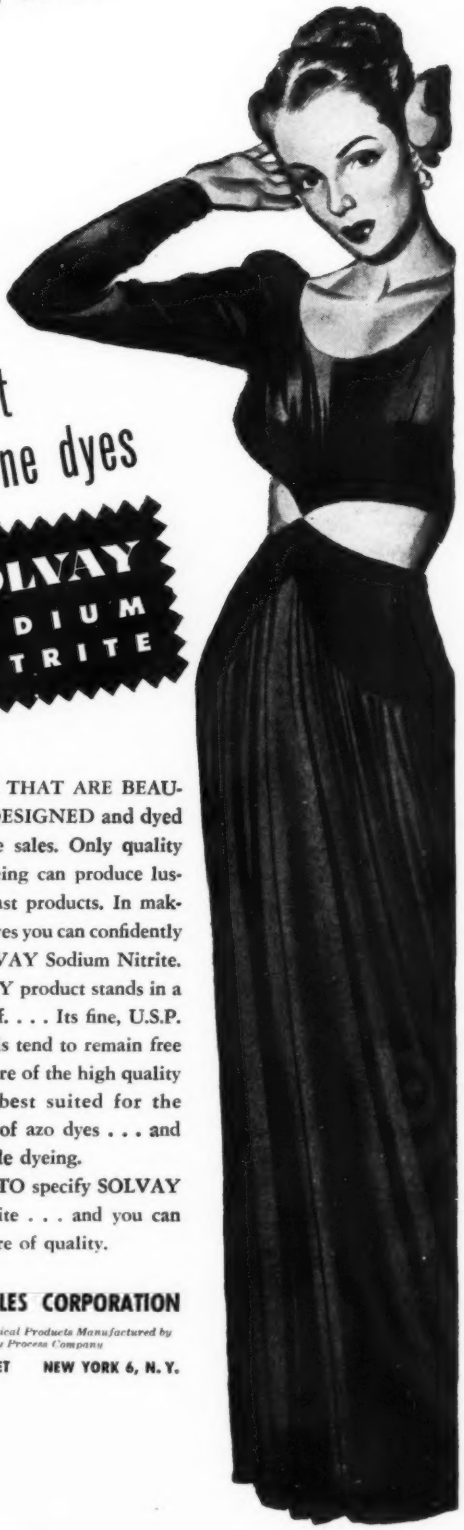
427 Moyer Street · Philadelphia 25, Pa.

IF YOU'RE DYED PROPERLY

YOU'RE NEVER DEAD!



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SODIUM
NITRITE

● FABRICS THAT ARE BEAUTIFULLY DESIGNED and dyed always invite sales. Only quality dyes and dyeing can produce lustrous, colorfast products. In making quality dyes you can confidently rely on SOLVAY Sodium Nitrite. This SOLVAY product stands in a class by itself. . . . Its fine, U.S.P. Grade crystals tend to remain free flowing . . . are of the high quality and purity best suited for the manufacture of azo dyes . . . and for fine textile dyeing.

BE SURE TO specify SOLVAY Sodium Nitrite . . . and you can always be sure of quality.

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Alkalies and Chemical Products Manufactured by The Solvay Process Company

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The rate for "Position Wanted" advertisements in this column is 2 cents a word—with a minimum of 50 cents per insertion. For all other types of advertisements—i.e., help wanted, machinery or supplies for sale—the rate is $6.25 per column inch or less per insertion.

CONFIDENTIAL EMPLOYMENT SERVICE — We invite correspondence (confidential) with Dyers, Chemists, Colorists, Superintendents, Master Mechanics, Office Managers, and others seeking positions and with employers seeking high-grade men to fill vacancies or to make replacements. Charles P. Raymond Service, Inc., 294 Washington St., Boston, Mass. Over 45 years in business.

WANTED: Textile Chemist with experience in finishing and dyeing for research and development work with chemical company located in the Niagara Frontier area. Write Box 894.

POSITION WANTED: Superintendent of Dyeing, wishes to make change in New England area. Textile school graduate with 19 years laboratory and mill experience. Supervisor of package and skein dyeing for over 10 years, working with cotton, wool, aralac, spun and filament rayons. Write Box 887.

POSITION WANTED: Textile Chemist, 48, single with 23 years experience in cotton and rayon piece goods finishing; college graduate, capable of assuming charge of laboratory. Philadelphia area preferred. Write Box 888.

AGENCIES OPEN: OLD ESTABLISHED MANUFACTURER OF OIL AND CHEMICAL SPECIALTIES TO THE TEXTILE THROWING, DYEING AND FINISHING TRADE—ALSO METALWORKING INDUSTRIES—IS DESIROUS OF OBTAINING AGENTS FOR STATES OF ALABAMA, MISSISSIPPI, LOUISIANA, OHIO, ILLINOIS, WEST COAST AND MEXICO. WE INVITE CORRESPONDENCE FROM REPUTABLE HOUSES. WRITE BOX 896.

WANTED: Graduate textile chemist for research laboratory, Worcester, Massachusetts, area. Should have experience or background for trouble shooting in wet processing of wool and union piece goods. Must have initiative and be capable of carrying on self-directed work. Write Box 893.

WANTED: Assistant with some experience in hosiery dyeing, matching, etc. Prefer man familiar with dyestuff amounts ascertained by weight in grams on formulas, but not essential. Located in East. Starting salary $60.00. Box 899.

POSITION WANTED: Textile chemist and colorist; over 17 years' experience in application of all classes of dyestuffs to all fibres. Some resin experience. Desires position in technical sales or research. Capable of directing laboratory. Write Box 897.

WANTED: ORGANIC CHEMIST with experience in development and manufacture of dyestuffs, for research on new colors. Medium sized company, good facilities and personnel, near New York. Excellent opportunity. Send snapshot with record of training and experience. Our employees have been notified. Box 898.

WANTED: Dyer for Eastern Pennsylvania Plant. Experience in cotton and rayon box work. Prefer textile graduate. Write Box 895.

SALES REPRESENTATION

Established chemical manufacturing organization requires the immediate services of sales representatives who have well-established contacts in the textile industry, throughout New England and the South.

Our organization is producing large quantities of basic materials, and the men we select will not be hampered by today's scarcity of fats and oils.

You have our assurance that all correspondence will be treated in strict confidence.

Box No. 881

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SODIUM HYDROSULPHITE AND SO_2

Progressive textile processors are cutting costs with specialized equipment, developed by VIRGINIA, for application of these two textile stand-bys. Ask your VIRGINIA representative about the "Hydromiser" for regulating the feed of Sodium Hydrosulphite, and VIRGINIA'S semi-automatic antichlor method for controlling SO_2 concentrations in the sour box.

Offices and Stocks in:
New York • Boston
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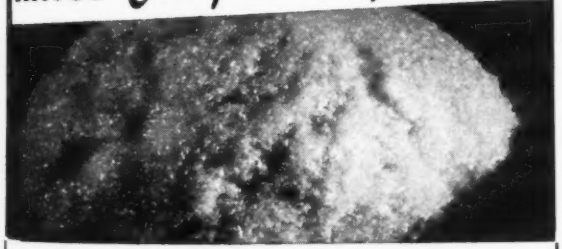
Detroit • Charlotte

VIRGINIA

VIRGINIA SMELTING COMPANY
WEST NORFOLK, VIRGINIA

RAYCO "Cellophane Spangles"



give Brilliant Sparkle in dot or design printing

Rayco "Cellophane Spangles," printed on cloth the same way as Rayco Flock, produce gleaming, brilliant effects. Produce contrasting color effects by using colored adhesive. A sure-fire way to make your goods a standout novelty.

Request sample of: "Spangles"

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Laurel Supergel—A thorough scour. Quickly removes size, grease, dirt.

Laurezol #6—Dissolves acetate colors.

Laurel Peramel—A lasting finish.

Laurel Hosiery Finishes—For natural and synthetic fibers and mixtures. Water repellents, spotproofing and waterproofing finishes.

Laurel Emulsions • Soaps • Oils • Finishes • Mildewproofing Compounds

Write today for recommendations.

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LAUREL SOAP MANUFACTURING CO., Inc.
Wm. H. Bertolet's Sons • *Established 1909*
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CHATTANOOGA, TENNESSEE

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SYNTHETIC DETERGENT

A low cost synthetic organic compound of exceptionally high detergent value. Effective in hard water, acid, or alkaline baths.

BURKART-SCHIER CHEMICAL CO.
CHATTANOOGA, TENNESSEE

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Creamsol . . . concentrated stearic Softener . . . Ideal for Bleached Goods but an excellent all-around Softener . . . Imparts Soft, Pleasing Handle.

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PINE-SOLVENT
BLEACHING DYEING

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"TRITON 770 is the answer to a lot of my kier boiling problems."

THE SERVICE THAT BUILT OUR BUSINESS CAN HELP YOURS

Our business has been built largely on the practical help we have been able to give our customers, right in their own plants, in adapting Rohm & Haas products to their needs.

Our representatives are men with technical training and practical experience in the use of industrial chemicals. Call in a member of our textile chemicals department when you need assistance in choosing or using . . .

Chemicals For Quality Textiles

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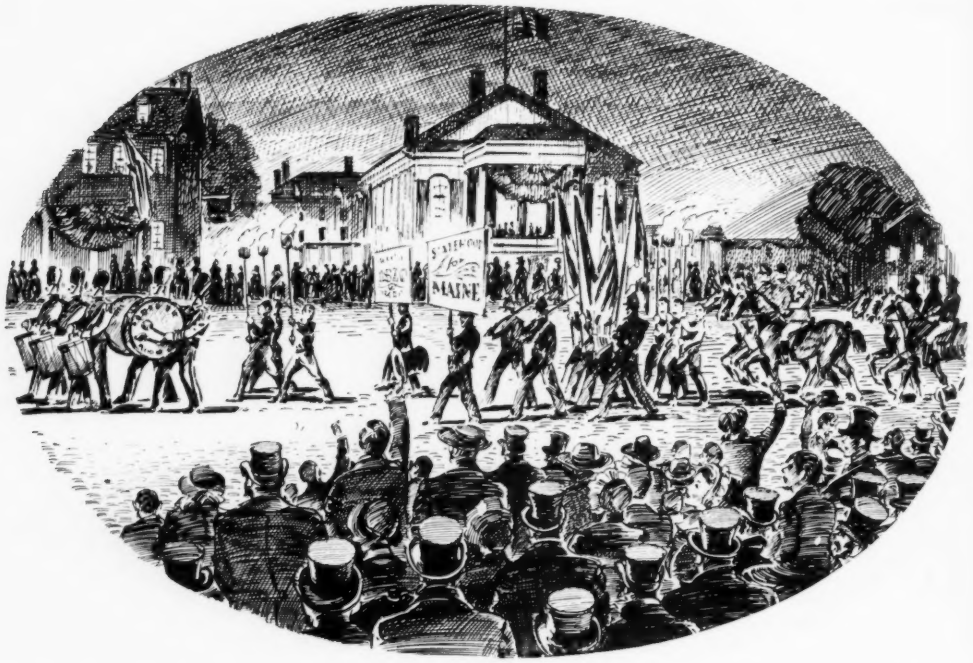

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It has been our aim for the past 126 years to develop and build machinery to anticipate every need of the Textile Industry . . . each new improvement bringing higher speeds and lower production costs. We have watched the Textile Industry grow from a handful of family-sized plants to its present position as America's Second Industry. We are proud to have played a part in its development.

Butterworth Service includes a complete line of Machinery for bleaching, mercerizing, dyeing, drying, printing and finishing fabrics and warps; calenders for cotton and rayon fabrics; spinning machinery for rayon filament yarns.

Butterworth Research keeps informed on the new developments in Textiles and Textile-finishing. Butterworth Engineering strives to interpret each new development in terms of Machine Design and Plant Arrangement. Write us.

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